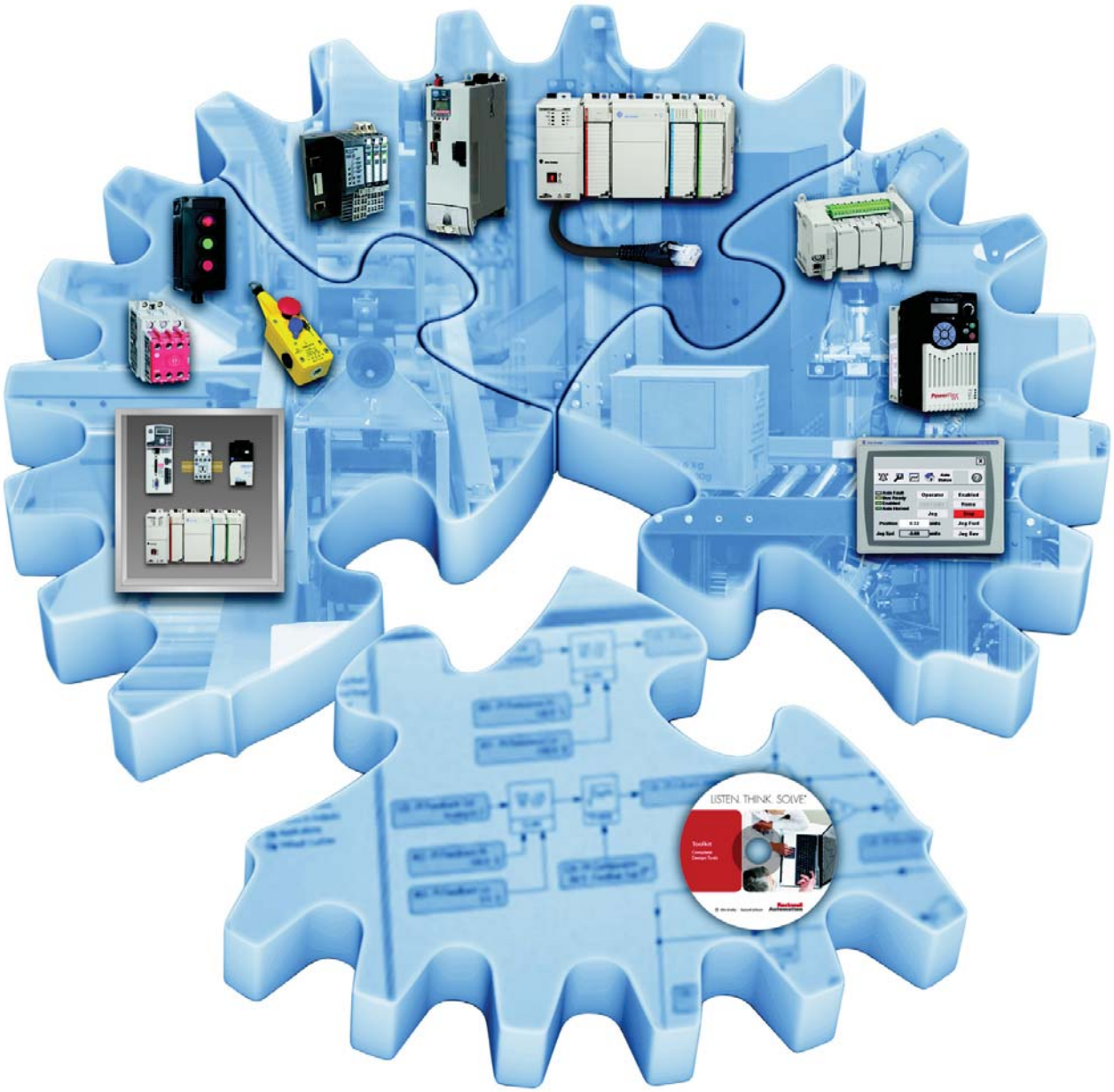
Quick Start

Allen-Bradley

PowerFlex 750-Series AC Drives



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Important User Information

Read this document and the documents listed in the additional resources section about installation, configuration, and operation of this equipment before you install, configure, operate, or maintain this product. Users are required to familiarize themselves with installation and wiring instructions in addition to requirements of all applicable codes, laws, and standards.

Activities including installation, adjustments, putting into service, use, assembly, disassembly, and maintenance are required to be carried out by suitably trained personnel in accordance with applicable code of practice.

If this equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

In no event will Rockwell Automation, Inc. be responsible or liable for indirect or consequential damages resulting from the use or application of this equipment.

The examples and diagrams in this manual are included solely for illustrative purposes. Because of the many variables and requirements associated with any particular installation, Rockwell Automation, Inc. cannot assume responsibility or liability for actual use based on the examples and diagrams.

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Throughout this manual, when necessary, we use notes to make you aware of safety considerations.

	WARNING: Identifies information about practices or circumstances that can cause an explosion in a hazardous environment, which may lead to personal injury or death, property damage, or economic loss.
	ATTENTION: Identifies information about practices or circumstances that can lead to personal injury or death, property damage, or economic loss. Attentions help you identify a hazard, avoid a hazard, and recognize the consequence.
IMPORTANT	Identifies information that is critical for successful application and understanding of the product.

Labels may also be on or inside the equipment to provide specific precautions.

	SHOCK HAZARD: Labels may be on or inside the equipment, for example, a drive or motor, to alert people that dangerous voltage may be present.
	BURN HAZARD: Labels may be on or inside the equipment, for example, a drive or motor, to alert people that surfaces may reach dangerous temperatures.
	ARC FLASH HAZARD: Labels may be on or inside the equipment, for example, a motor control center, to alert people to potential Arc Flash. Arc Flash will cause severe injury or death. Wear proper Personal Protective Equipment (PPE). Follow ALL Regulatory requirements for safe work practices and for Personal Protective Equipment (PPE).

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Introduction

This Quick Start publication is designed to guide you through the 6 BASIC STEPS that are required to start up your PowerFlex 750-Series AC drive for the first time for simple applications.

Who Should Use This Manual

This manual is intended for qualified personnel.

- You must understand the hazards that are associated with electromechanical equipment installations.
- You must understand and follow all applicable local, national, and/or international electrical codes.
- You must be able to program and operate Adjustable Frequency AC Drive devices.
- You must have an understanding of the parameter settings and functions.

Equipment

The following equipment requirements apply to the use of this publication.

- The drive is a PowerFlex 750-Series in a standalone installation.
- No load sharing or multiple motors on a single drive.
- The drive is equipped with either a PowerFlex 20-HIM-A6 or a 20-HIM-C6S Human Interface Module (HIM).
- The drive is used with an induction motor type only.

Supported Applications

This publication is intended for use on typical applications such as fans, pumps, compressors, and conveyors.

IMPORTANT PowerFlex 750-Series drives handle multiple types of motors and applications globally that are not covered in this manual.

Installation

The content of this manual assumes that the drive is installed according to Rockwell Automation guidelines and includes the following.

- The drive installation meets mechanical requirements for drive orientation, cooling airflow, and mounting hardware.
- The drive installation meets environmental requirements for surrounding air temperature, ambient atmosphere, and the enclosure rating.
- The drive installation meets electrical requirements for AC supply, motor sizing, wiring and grounding, and overload and short circuit protection.
- The drive installation is compliant with all applicable local, national, and international codes, standards, and requirements.

For More Information

The following table lists publications that provide general drive-related information.

Resource	Description
PowerFlex 750-Series AC Drives Technical Data, publication 750-TD001	Provides detailed information on: • Drive specifications • Option specifications • Fuse and circuit breaker ratings
PowerFlex 750-Series AC Drives Installation Instructions, publication 750-IN001	Provides detailed information on: • Drive installation • Power wiring • I/O wiring
PowerFlex 750-Series AC Drives Programming Manual, publication 750-PM001	Provides detailed information on: • I/O, control, and feedback options • Parameters and programming • Faults, alarms, and troubleshooting
PowerFlex 750-Series AC Drives Reference Manual, publication 750-RM002	Provides detailed information on utilizing specific drive features in common applications.
Wiring and Grounding Guidelines for Pulse Width Modulated (PWM) AC Drives Installation Instructions, publication DRIVES-IN001	Provides the basic information needed to properly install, protect, wire, and ground pulse width modulated (PWM) AC drives.
PowerFlex 20-HIM-A6 / -C6S HIM (Human Interface Module) User Manual, publication 20HIM-UM001	Provides detailed information on HIM components, operation, and features.
PowerFlex Dynamic Braking Resistor Calculator Application Technique, publication PFLEX-AT001	Provides detailed information on dynamic braking components, operation, and features.
PowerFlex 20-750-ENETR Dual-Port EtherNet/IP Option Module User Manual, publication 750COM-UM008	Provides detailed information on installing, configuring, using, and troubleshooting the dual-port EtherNet/IP option module.
PowerFlex 755 Drive Embedded EtherNet/IP Adapter User Manual, publication 750COM-UM001	Provides detailed information on installing, configuring, using, and troubleshooting the embedded EtherNet/IP adapter.

Step 1: Gather Required Information

When you apply power to your drive for the first time, you need to enter specific information about your application. You need to enter motor nameplate data and set up your I/O.

Step 1: Gather Required Information helps you to verify that you have the needed information prior to drive powerup.

Record Motor Nameplate Data

Record the motor nameplate data to be entered into the Motor Data parameters during powerup. You can also record data for up to five drive/motor combinations. Use this table to record a descriptive name for each drive/motor combination and their respective parameters.

		Drive/Motor 1:	Drive/Motor 2:	Drive/Motor 3:	Drive/Motor 4:	Drive/Motor 5:
Drive/Motor Name (example, Main Exhaust Fan)						
Parameter No.	**Parameter Name**	**Drive/Motor 1:**	**Drive/Motor 2:**	**Drive/Motor 3:**	**Drive/Motor 4:**	**Drive/Motor 5:**
25	Motor NP Volts					
26	Motor NP Amps					
27	Motor NP Hertz					
28 (1)	Motor NP RPM					
29 (2)	Mtr NP Pwr Units	❑ kW ❑ Hp	❑ kW ❑ Hp	❑ kW ❑ Hp	❑ kW ❑ Hp	❑ kW ❑ Hp
30	Motor NP Power					
31 (3)	Motor Poles					

(1) Use the Slip RPM rather than the Synchronous RPM.
Example: Use 1750 RPM rather than 1800 RPM for a 60 Hz motor.

(2) The default units for parameter 29 [Motor NP Pwr Units] is horsepower (Hp).

(3) To calculate: Number of poles = 120 x parameter 27 [Motor NP Hertz] / parameter 28 [Motor NP RPM]. Round the result to the nearest even whole number.
Example: 120 x 60 Hz / 1800 RPM = 4 poles

Step 2: Validate the Drive Installation

It is important that you thoroughly inspect each of your drive installations before applying power for the first time. This is especially important if you did not personally perform the installation tasks. Satisfy yourself now that each drive is ready to be energized when you get to Step 3: Power Up, Configure the Drive, and Spin the Motor Shaft.

ATTENTION: To avoid an electric shock hazard, the drive must be locked and tagged before continuing Step 2: Validate the Drive Installation. Failure to comply can result in personal injury and/or equipment damage.

Identify Which Drive You Have

There are two types of PowerFlex 750-Series drives, the PowerFlex 753 and the PowerFlex 755. There are some important differences between the drives that need to be considered in subsequent steps. If you don't know how to determine what type of drive you have, see Determine Drive Type on page 22.

	Drive/Motor 1:	Drive/Motor 2:	Drive/Motor 3:	Drive/Motor 4:	Drive/Motor 5:
Drive/Motor Name (example, Main Exhaust Fan)					
Installed Drive	❑ 753 ❑ 755	❑ 753 ❑ 755	❑ 753 ❑ 755	❑ 753 ❑ 755	❑ 753 ❑ 755

Verify Power Wiring

Visually inspect the power wiring connections to each drive. Be sure you are satisfied that the correct wires are connected to the input terminals and to the output terminals. See Power Wiring on page 23 for more information on where these connections are made.

Verify Wiring	Drive 1 Wiring is Correct	Drive 2 Wiring is Correct	Drive 3 Wiring is Correct	Drive 4 Wiring is Correct	Drive 5 Wiring is Correct
AC input power is on L1, L2, L3 / R, S, T.	❑	❑	❑	❑	❑
Output motor connection is on T1, T2, T3 / U, V, W.	❑	❑	❑	❑	❑
Proper ground wire terminations at PE ground studs.	❑	❑	❑	❑	❑
If equipped, dynamic brake resistor connection is on BR1 and BR2. If wires are present, go to Dynamic Brake Resistor on page 66 to record dynamic brake resistor nameplate information.	❑	❑	❑	❑	❑

IMPORTANT Rockwell Automation recommends that XLPE-type cabling be used on output of the drive.

Verify Power Jumper Configuration

PowerFlex 750-Series drives contain protective MOVs and common mode capacitors that are referenced to ground. To guard against drive damage and/or operation problems, these devices must be properly configured.

IMPORTANT A properly configured drive has all jumpers connected or all jumpers disconnected, depending on whether the power source is solid grounded or non-solid grounded. If jumpers are not all connected or all disconnected, the power jumpers **are not** properly configured. The drive power source type must be accurately determined and the jumpers must be configured for the power source. See Power Jumpers on page 27 for more information on common power source types and where power jumpers are in the drive.

Valid Power Jumper Configurations

Power Source	Jumper Positions (1)
Solid Ground	All Connected
Non-solid Ground, including High-resistance Grounding	All Disconnected

(1) See Power Jumper Locations on page 28.

Record that the power jumper configuration for each drive is correct.

Drive 1 Power jumpers are configured correctly.	Drive 2 Power jumpers are configured correctly.	Drive 3 Power jumpers are configured correctly.	Drive 4 Power jumpers are configured correctly.	Drive 5 Power jumpers are configured correctly.
❑	❑	❑	❑	❑

Verify I/O Wiring

To properly configure a drive, you need to know the source of the speed reference and the start/stop commands. There are three places where signal sources (such as push buttons and potentiometers) are connected to the drive.

1. The drive's main control board.
   - Terminal block TB1 on a PowerFlex 753
   - Embedded EtherNet/IP port on a PowerFlex 755
   - Terminal block TB1 on a PowerFlex 755 Di0
2. An expansion I/O module.
3. A communication network module.

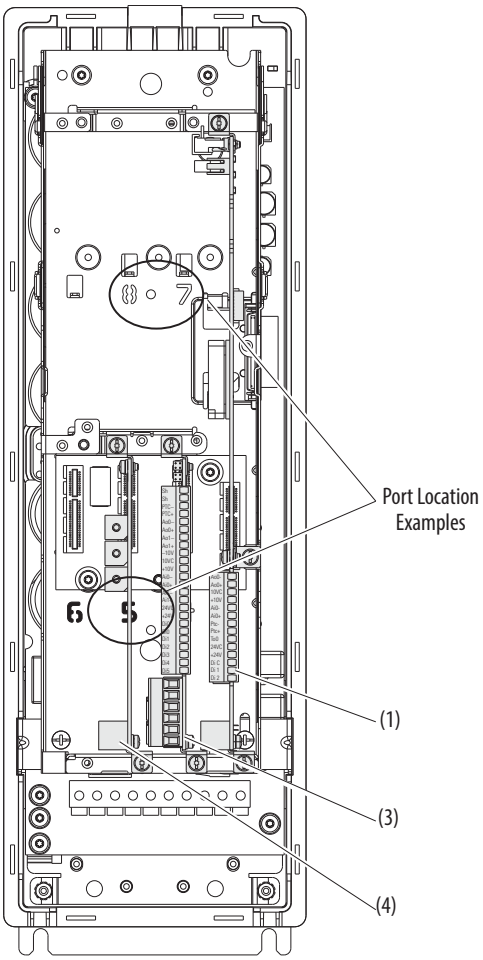
IMPORTANT The drive can always be controlled by the HIM for speed, start, and stop control. If that is the case for operating conditions, proceed to Step 3: Power Up, Configure the Drive, and Spin the Motor Shaft on page 12.

Where are Signal Sources Connected?

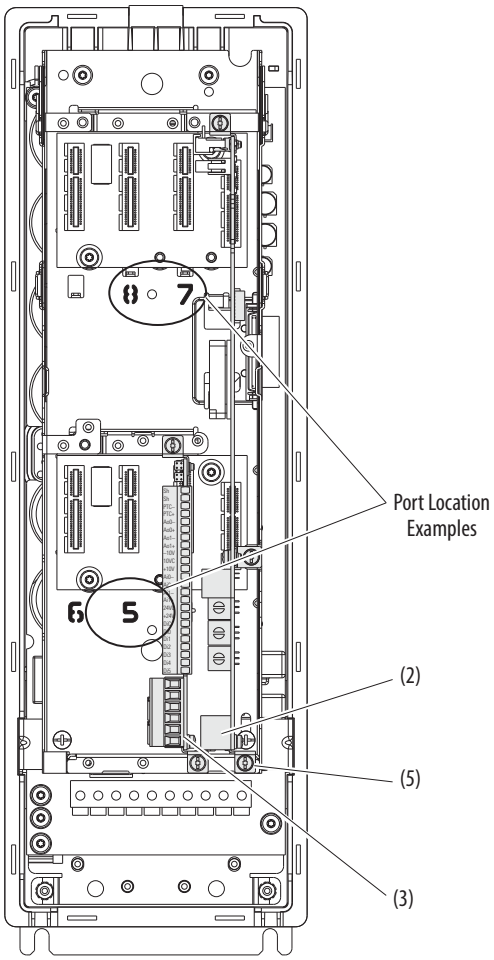
Use this diagram to help determine where signal sources are connected in each of your drives.
You will need this information when you get to Step 4: Set Up Speed Reference and Start/Stop on page 17.

IMPORTANT The 750-Series drive uses the term 'Port' to designate (in software) the physical location where hardware is located for ease of selecting hardware or functions to program. For more information on port locations, see Drive Device Ports on page 33.

PowerFlex 753



PowerFlex 755



Item	Description
(1)	Terminal block TB1, PowerFlex 753 drives.
(2)	Embedded EtherNet/IP, PowerFlex 755 drives.
(3)	Expansion I/O module, PowerFlex 753 and 755 drives. (Port 4 installation shown.)
(4)	Communication network module, PowerFlex 753 drives. (Port 6 installation shown.)
(5)	Terminal block TB1 on PowerFlex 755 drive is located behind the Ethernet port.

Refer to the diagram on page 10 for item number locations.

Item					
(1)	Are signal sources connected to terminal block TB1 on your **PowerFlex 753** drive?				
	Drive 1: ❑ Yes ❑ No	**Drive 2:** ❑ Yes ❑ No	**Drive 3:** ❑ Yes ❑ No	**Drive 4:** ❑ Yes ❑ No	**Drive 5:** ❑ Yes ❑ No
(2)	Is there a connection to the Embedded EtherNet/IP port on your **PowerFlex 755** drive?				
	Drive 1: ❑ Yes ❑ No	**Drive 2:** ❑ Yes ❑ No	**Drive 3:** ❑ Yes ❑ No	**Drive 4:** ❑ Yes ❑ No	**Drive 5:** ❑ Yes ❑ No
(3)	Are signal sources connected to an expansion I/O module installed in your drive? If yes, note the module's port number.				
	Drive 1: ❑ Yes: Port No. ____ ❑ No	**Drive 2:** ❑ Yes: Port No. ____ ❑ No	**Drive 3:** ❑ Yes: Port No. ____ ❑ No	**Drive 4:** ❑ Yes: Port No. ____ ❑ No	**Drive 5:** ❑ Yes: Port No. ____ ❑ No
(4)	Are signal sources connected to a communication network module installed in your **PowerFlex 753** drive? If yes, note the module's port number.				
	Drive 1: ❑ Yes: Port No. ____ ❑ No	**Drive 2:** ❑ Yes: Port No. ____ ❑ No	**Drive 3:** ❑ Yes: Port No. ____ ❑ No	**Drive 4:** ❑ Yes: Port No. ____ ❑ No	**Drive 5:** ❑ Yes: Port No. ____ ❑ No
	Which EtherNet/IP configuration is your drive using (BOOTP, DHCP, or manual IP address)? If using a manual IP address, enter the IP address and the subnet address.				
	Drive 1: ❑ BOOTP ❑ DHCP ❑ Manual IP Address ___.___.___.___ Subnet Mask (if required) ___.___.___.___ Gateway Address (if required) ___.___.___.___	**Drive 1:** ❑ BOOTP ❑ DHCP ❑ Manual IP Address ___.___.___.___ Subnet Mask (if required) ___.___.___.___ Gateway Address (if required) ___.___.___.___	**Drive 1:** ❑ BOOTP ❑ DHCP ❑ Manual IP Address ___.___.___.___ Subnet Mask (if required) ___.___.___.___ Gateway Address (if required) ___.___.___.___	**Drive 1:** ❑ BOOTP ❑ DHCP ❑ Manual IP Address ___.___.___.___ Subnet Mask (if required) ___.___.___.___ Gateway Address (if required) ___.___.___.___	**Drive 1:** ❑ BOOTP ❑ DHCP ❑ Manual IP Address ___.___.___.___ Subnet Mask (if required) ___.___.___.___ Gateway Address (if required) ___.___.___.___

Verify the status of the enable jumper and the safety jumper.

- If the enable jumper is removed, control power is required at Di0 on the main control board for the drive to be able to accept a Start command. See parameter 220 [Digital In Sts] bit 0. For more information, see PowerFlex 750-Series AC Drive Installation Instructions, publication 750-IN001.
- If the safety jumper is removed, see Safe Speed Monitor Option Module for PowerFlex 750-Series AC Drives Safety Reference Manual, publication 750-RM001 for catalog number 20-750-S1 and PowerFlex 750-Series Safe-Torque Off User Manual, publication 750-UM002 for catalog number 20-750-S.

Step 3: Power Up, Configure the Drive, and Spin the Motor Shaft

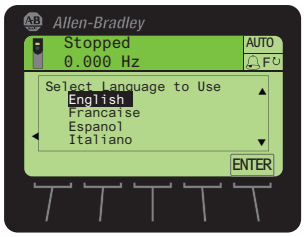
In this step you will power up each of your drives, configure each drive by entering parameter values, and initiate a Static Tune Autotune routine by using the 7-Class HIM.

If you are not familiar with using a HIM and need additional information, see HIM Overview on page 34 or refer to the PowerFlex 20-HIM-A6 / -C6S HIM (Human Interface Module) User Manual, publication 20HIM-UM001.

Power the Drive

ATTENTION: Power must be applied to the drive to perform the following start-up procedure. Some of the voltages present are at incoming line potential. To avoid electric shock hazard or damage to equipment, allow only qualified service personnel to perform the following procedure. Thoroughly read and understand the procedure before beginning.

1. Apply AC power and control voltages to the drive.
2. When prompted, use the or to highlight the desired display language.

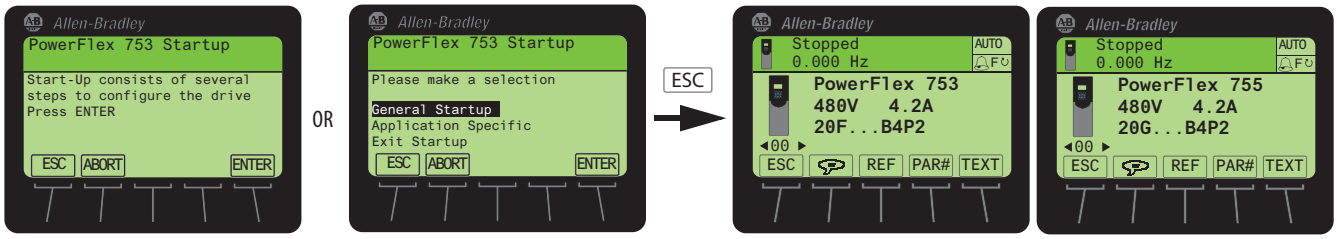


Language Selection Screen

3. Press the ENTER soft key to select the language.

IMPORTANT Language selection only applies to new drives. It is not required if the drive has been previously used or when resetting from factory defaults. If this drive was previously powered and configured, and is being repurposed for this application, reset the drive parameters following the instructions in Resetting Factory Defaults on page 37.

4. If either of the screens below display on the HIM, press the ESC soft key until the Main Powerup Screen displays.



Main Startup Screen | Startup Screen | PowerFlex 753 Main Powerup Screen | PowerFlex 755 Main Powerup Screen

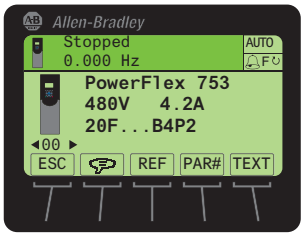
5. Proceed to Drive Setup on page 13.

Drive Setup

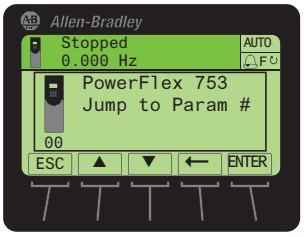
Follow these steps to set up each of your drives.

Enter Motor Nameplate Data

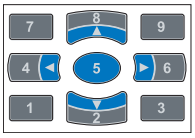
1. From the Main Powerup Screen, access parameter 25 [Motor NP Volts].
   - Press the PAR# soft key.
   - Enter 25 using the numeric keys.
   - Press the ENTER soft key.



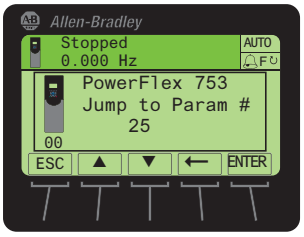
PowerFlex 753 Powerup Screen



Parameter Screen

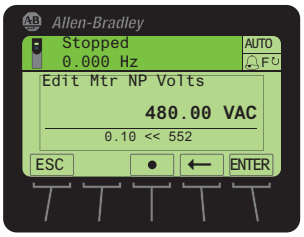


Keypad

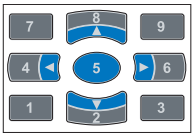


Parameter Screen

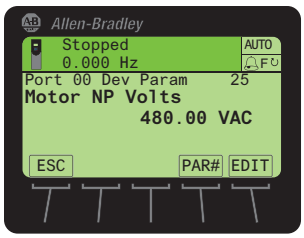
2. Use the numeric value from the Motor Nameplate data gather in Step 1: Gather Required Information under Record Motor Nameplate Data on page 7 to verify the value on the screen. If a change is required,
   - Press the EDIT soft key.
   - Enter the nameplate voltage numeric value using the keypad.
   - Press the ENTER soft key.



Edit Motor NP Volts Screen



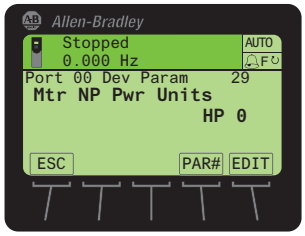
Keypad



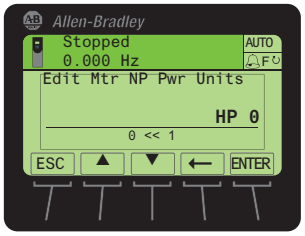
Motor NP Volts Screen

3. Press 8 on the keypad to advance to the next parameter number, and continue to enter the remaining motor data gathered in Step 1: Gather Required Information in this order.
   - Parameter 26 [Motor NP FLA]
   - Parameter 27 [Motor NP Hertz]
   - Parameter 28 [Motor NP RPM]

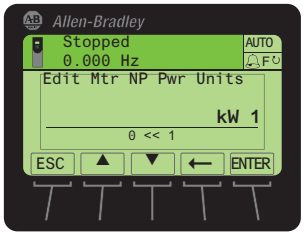
- Parameter 29 [Mtr NP Pwr Units]
  For parameter 29, choose the unit of measurement is based on the actual nameplate.
  If the nameplate is in HP (default unit), continue to parameter 30 [Motor NP Power].
  If your nameplate value is in kW, change the default power units from HP to kW.
  a. Press the EDIT soft key.
  b. Use the ▲ soft key to scroll to kW.
  c. Press the ENTER soft key.



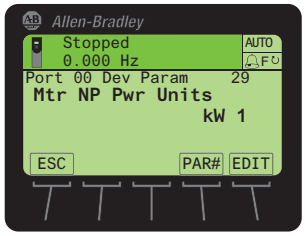
Motor NP Power Units Screen



Power Units Selection Screen



Power Units Selection Screen

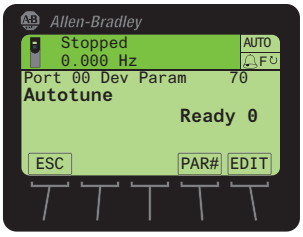


Motor NP Power Units Screen

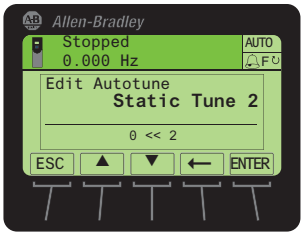
- Parameter 30 [Motor NP Power]
- Parameter 31 [Motor Poles]

Autotune

1. Access parameter 70 [Autotune].
   - Press the PAR# soft key.
   - Enter 70.
   - Press the ENTER soft key.
2. Press the EDIT soft key and use the ▲ or ▼ soft keys to select "Static Tune 2."

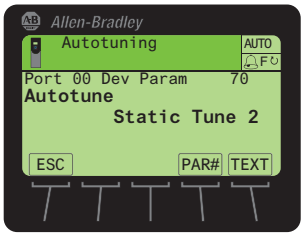


Parameter Screen

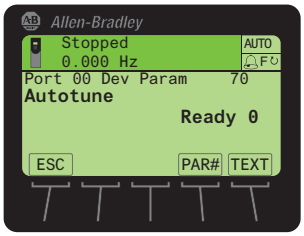


Edit Screen

3. Press the Start | key.
   "Autotuning" replaces "Stopped" while the drive is tuning. After Autotune routine is done, "Ready 0" appears in parameter 70 [Autotune] and the top line again displays "Stopped".



In Progress Screen



Result Screen

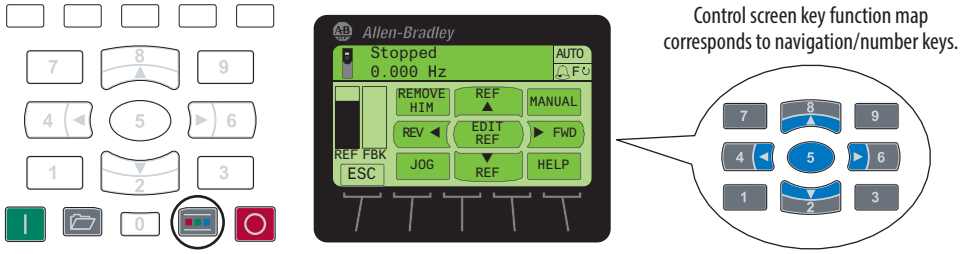
4. The Autotune routine is complete.
5. Press the ESC soft key to exit Autotune.

Direction Test

ATTENTION: This procedure causes movement of the motor shaft and of any connected equipment. To guard against personal injury or damage to equipment, ensure that all guards are properly installed to help protect against contact with rotating parts.

1. Press the Controls key on the keypad.
2. Use Jog to bump the motor shaft to verify direction.
   If the motor shaft's direction of rotation is NOT correct, shut power off and follow all safe practices to change motor power terminals U/T1 and V/T2 motor wire connections at the drive or at the motor.
   See Power Wiring on page 23.

ATTENTION: If changing the wires on U/T1 and V/T2 is not practical or desired, you can set parameter 40 [Reverse Motor Leads], bit 4 to '1'. It is important to note, however, that parameter 40 [Reverse Motor Leads] resets to '0' if parameters are reset to factory default. It is necessary to reset parameter 40 [Reverse Motor Leads] bit 4 to '1' after resetting the parameters to default to prevent personal injury or damage to the equipment.



IMPORTANT If the motor power terminals were changed, it is necessary to press the Controls key on the keypad and Jog to bump the motor shaft to verify the direction change.

3. Press the ESC soft key to exit direction test.

Configuration Complete

The drive is able to start/stop from the HIM and has been successfully started up.

Proceed to Step 4: Set Up Speed Reference and Start/Stop to complete your drive setup.

Step 4: Set Up Speed Reference and Start/Stop

Select the configuration according to the wiring you observed in Step 2: Validate the Drive Installation.

Input/Output Configuration Checklists

Speed Reference Source

Drive 1	Drive 2	Drive 3	Drive 4	Drive 5	Speed Reference Source	Wiring Diagram
HIM (typically Port 1) (If you have a door-mounted or remote-mounted HIM on Port 2 or Port 3, refer to Drive Device Ports on page 33 for more information.)						
❑	❑	❑	❑	❑	User Adjustable at Drive	page 38
Connections on PowerFlex 753 Main Control Board (Port 0)						
❑	❑	❑	❑	❑	0…20 mA Analog Input - Unipolar Speed Reference	page 41
❑	❑	❑	❑	❑	0…+10V Analog Input - Unipolar Speed Reference	page 42
❑	❑	❑	❑	❑	10k Ohm Potentiometer - Unipolar Speed Reference	page 42
Connections on 11-Series Expansion I/O Module - Cat. No. 20-750-11xxx-xxxx (Port 4) (See page 32 for option module catalog numbers and port location options.)						
❑	❑	❑	❑	❑	0…20 mA Analog Input - Unipolar Speed Reference	page 45
❑	❑	❑	❑	❑	0…+10V Analog Input - Unipolar Speed Reference	page 45
❑	❑	❑	❑	❑	10k Ohm Potentiometer - Unipolar Speed Reference	page 45
Connections on 22-Series Expansion I/O Module - Cat. No. 20-750-22xxx-xxxx (Port 4) (See page 32 for option module catalog numbers and port location options.)						
❑	❑	❑	❑	❑	0…20 mA Analog Input - Unipolar Speed Reference at Terminals Ai0±	page 49
❑	❑	❑	❑	❑	0…+10V Analog Input - Unipolar Speed Reference at Terminals Ai0±	page 49
❑	❑	❑	❑	❑	10k Ohm Potentiometer - Unipolar Speed Reference at Terminals Ai0±	page 49
❑	❑	❑	❑	❑	0…20 mA Analog Input - Unipolar Speed Reference at Terminals Ai1±	page 50
❑	❑	❑	❑	❑	0…+10V Analog Input - Unipolar Speed Reference at Terminals Ai1±	page 50
❑	❑	❑	❑	❑	10k Ohm Potentiometer - Unipolar Speed Reference at Terminals Ai1±	page 50
Communications Connection (See page 32 for communication option module catalog numbers and port location options.)						
❑	❑	❑	❑	❑	Communication over PF755 Embedded Ethernet/IP (Port 13) (Port 13)	page 52
❑	❑	❑	❑	❑	Communication over EtherNet/IP on 20-750-ENETR Module (Port 6)	page 57

Start, Stop, and Direction Source

Drive 1	Drive 2	Drive 3	Drive 4	Drive 5	Start, Stop, and Direction Source	Wiring Diagram
HIM (Port 1)						
❑	❑	❑	❑	❑	User Adjustable at Drive	page 38
3-Wire Control (See 2-Wire and 3-Wire Control on page 63 for more information.)						
❑	❑	❑	❑	❑	3-Wire Control on PF753 Main Control Board	page 43
❑	❑	❑	❑	❑	3-Wire Control on 11-Series I/O Module	page 47
❑	❑	❑	❑	❑	3-Wire Control on 22-Series I/O Module	page 51
2-Wire Control (See 2-Wire and 3-Wire Control on page 63 for more information.)						
❑	❑	❑	❑	❑	2-Wire Control on PF753 Main Control Board	page 42
❑	❑	❑	❑	❑	2-Wire Control on 11-Series I/O Module	page 46
❑	❑	❑	❑	❑	2-Wire Control on 22-Series I/O Module	page 51

Step 5: Special Considerations

Drive 1	Drive 2	Drive 3	Drive 4	Drive 5	Description	Details
Dynamic Brake						
❑	❑	❑	❑	❑	Dynamic brake resistor connected to BR1 and BR2.	page 66
Accel and Decel Rates						
❑	❑	❑	❑	❑	Accel and decel rates are set according to load inertia. Decel rate can affect the need for dynamic braking.	page 68
Analog Output						
❑	❑	❑	❑	❑	PowerFlex 753 connected to TB1 terminals Ao0±.	page 74
❑	❑	❑	❑	❑	Expansion I/O module connected to Ao0±.	page 74
Digital Output						
❑	❑	❑	❑	❑	PowerFlex 753 main control board connects to TD1 (TO0) as appropriate.	page 75
❑	❑	❑	❑	❑	Expansion I/O module connected to TB1 (TO and TC or T1) as appropriate.	page 75
Relay Output						
❑	❑	❑	❑	❑	PowerFlex 753 main control board connected to TB2 (R0C and R0NO or R0NC) as appropriate.	page 76
❑	❑	❑	❑	❑	Expansion I/O module connected to TB2 (R0C and R0NO or R0NC) as appropriate.	page 76
Disable HIM Function						
❑	❑	❑	❑	❑	Option to restrict logic control (start, jog, direction) via the HIM, if the user requires to only use other discrete input or communications controlled start/run, jog, and direction commands.	page 77
HIM CopyCat Function						
❑	❑	❑	❑	❑	Option to upload individual parameter sets for the host drive or any of its connected peripherals into the HIM.	page 78
Motor Overload						
❑	❑	❑	❑	❑	Adjust motor overload protection as appropriate.	page 82
Type of Communications Other than EtherNet/IP						
❑	❑	❑	❑	❑	Communication options other than EtherNet/IP.	See the publications in For More Information on page 6.

Step 6: Verify Drive Operation

Now that you have completed the steps required to start up your drive for the first time, verify and record that each of your drive/motor combinations is operating correctly.

Use the information displayed on the HIM, the drive status indicators to the right of the HIM, and the system operation to assist with verifying drive operation.

1. Is each drive/motor combination responding correctly to each of the signal sources?

Signal Command	Drive/Motor 1	Drive/Motor 2	Drive/Motor 3	Drive/Motor 4	Drive/Motor 5
Start	❑	❑	❑	❑	❑
Stop	❑	❑	❑	❑	❑
Direction (if applicable)	❑	❑	❑	❑	❑

2. Is each drive/motor combination responding correctly to the speed reference source? (Check only those that apply.)

Speed Reference	Drive/Motor 1	Drive/Motor 2	Drive/Motor 3	Drive/Motor 4	Drive/Motor 5
HIM Source	❑ Yes ❑ No	❑ Yes ❑ No	❑ Yes ❑ No	❑ Yes ❑ No	❑ Yes ❑ No
Control Board Analog Input	❑ Yes ❑ No	❑ Yes ❑ No	❑ Yes ❑ No	❑ Yes ❑ No	❑ Yes ❑ No
Expansion I/O Module Analog Input (Port 4)	❑ Yes ❑ No	❑ Yes ❑ No	❑ Yes ❑ No	❑ Yes ❑ No	❑ Yes ❑ No
Communications over EtherNet/IP (Port 6 or Port 13)	❑ Yes ❑ No	❑ Yes ❑ No	❑ Yes ❑ No	❑ Yes ❑ No	❑ Yes ❑ No
Communications over Other Protocol (Port 6)	❑ Yes ❑ No	❑ Yes ❑ No	❑ Yes ❑ No	❑ Yes ❑ No	❑ Yes ❑ No

Configuration Considerations

If any of your drive/motor combinations are not functioning properly, review steps 1...6 to be sure that the correct information was gathered or calculated and that parameters were set correctly.

If your EtherNet/IP communications are not functioning properly, verify the controller/PLC is communicating the expected commands and/or reference. For more information, refer to the PowerFlex 20-750-ENETR Dual-Port EtherNet/IP Option Module User Manual, publication 750COM-UM008 or the PowerFlex 755 Drive Embedded EtherNet/IP Adapter User Manual, publication 750COM-UM001, or contact your PLC expert.

To interpret the Drive Status Indicators, see page 65.

If performance problems persist, refer to the publications listed in For More Information on page 6.

If you feel you need additional technical support, gather the information listed on page 83 prior to contacting a support representative.

Notes:

Reference Section

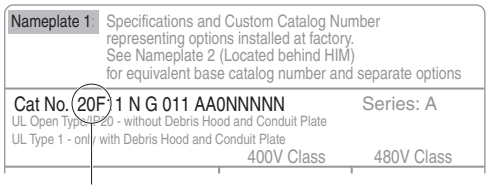
These topics are included to provide more detail about the tasks required to start up and configure your drive.

Topic	Page
Determine Drive Type	22
Power Wiring	23
Power Jumpers	27
Identify Option Modules and Compatible Ports	32
Drive Device Ports	33
HIM Overview	34
Resetting Factory Defaults	37
Typical Speed Reference Examples	38
EtherNet/IP Communication	52
2-Wire and 3-Wire Control	63
Drive Status Indicators	65
Dynamic Brake Resistor	66
Acceleration and Deceleration Time	68
Direction Mode	70
Analog Output Wiring	74
Digital Output Wiring	75
Relay Output Wiring	76
Disable the HIM Start Function	77
HIM CopyCat Function	78
Motor Overload	82
If You Have to Contact Technical Support	83

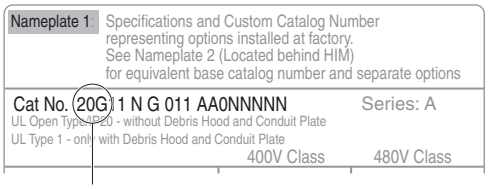
Determine Drive Type

There are three easy ways to determine which drive you are working with.

1. Look at the label on the drive cover. (The label is located behind the HIM.) If the cover is not installed on the drive, use one of the following methods.
2. Locate Nameplate 1 on the drive chassis. The first three characters of the catalog number indicate the drive type.

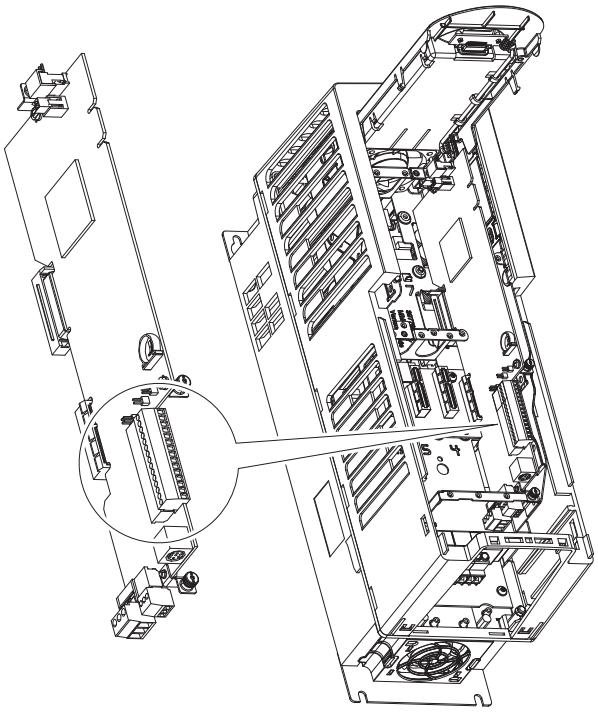

Nameplate 1
Specifications and Custom Catalog Number
representing options installed at factory.
See Nameplate 2 (Located behind HIM)
for equivalent base catalog number and separate options
Cat No. 20F 1 N G 011 AA0NNNNN
Series: A
UL Open Type IP20 - without Debris Hood and Conduit Plate
UL Type 1 - only with Debris Hood and Conduit Plate
400V Class
480V Class

20F = PowerFlex 753

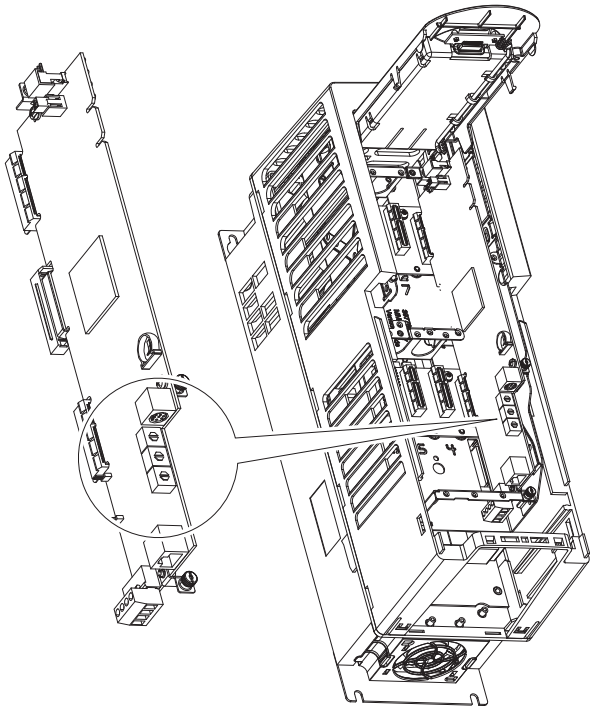

Nameplate 1
Specifications and Custom Catalog Number
representing options installed at factory.
See Nameplate 2 (Located behind HIM)
for equivalent base catalog number and separate options
Cat No. 20G 1 N G 011 AA0NNNNN
Series: A
UL Open Type IP20 - without Debris Hood and Conduit Plate
UL Type 1 - only with Debris Hood and Conduit Plate
400V Class
480V Class

20G = PowerFlex 755

3. Look at the main control board that is installed in the drive.



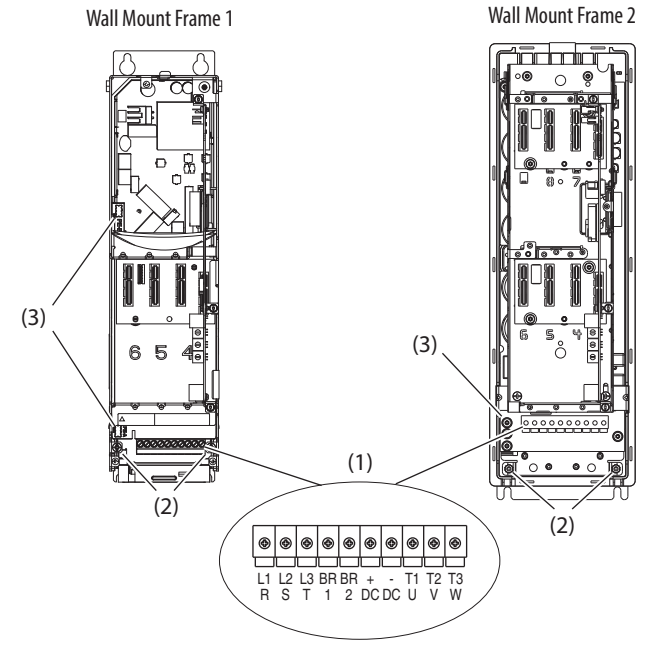
PowerFlex 753 has a 14-point I/O terminal block.

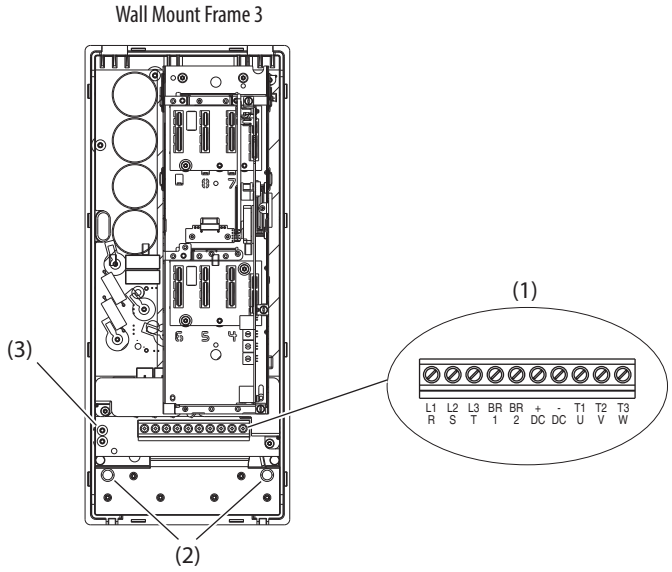


PowerFlex 755 has three EtherNet/IP address selectors.

Power Wiring

Wall Mount Frames 1…3 Power Terminal Block and Termination Point Locations

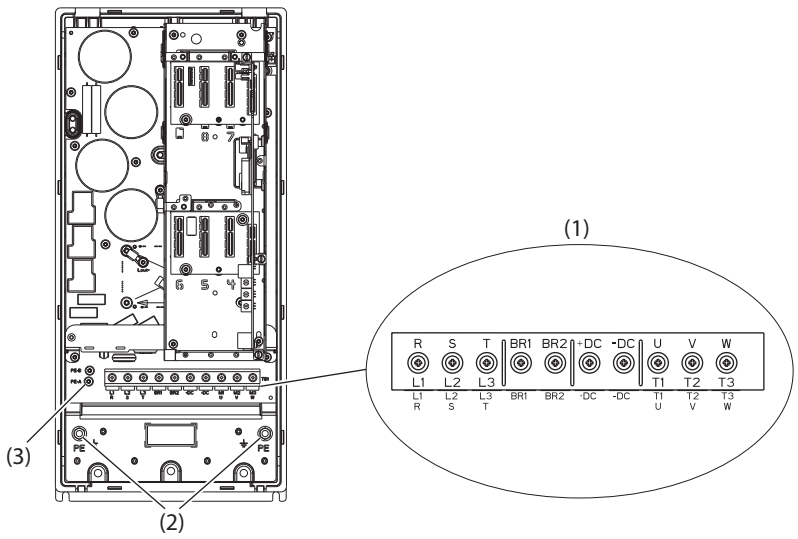




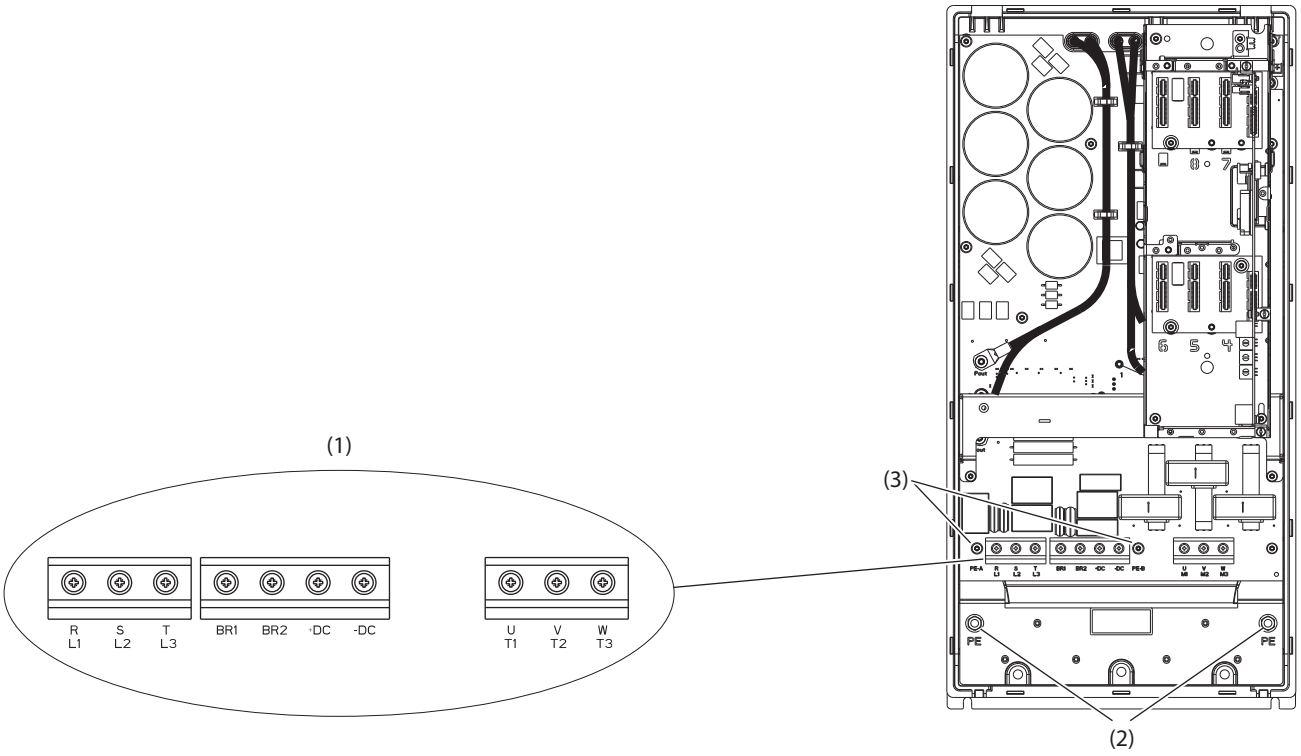
No.	Name	Description
(1)	Power Terminal Block	R/L1, S/L2, T/L3, BR1, BR2, +DC, -DC, U/T1, V/T2, W/T3
(2)	PE Grounding Studs	Terminating point to chassis ground for incoming AC line and motor shields.
(3)	PE-A and PE-B	MOV and CMC Jumpers

Wall Mount Frames 4…5 Power Terminal Block and Termination Point Locations

Wall Mount Frame 4



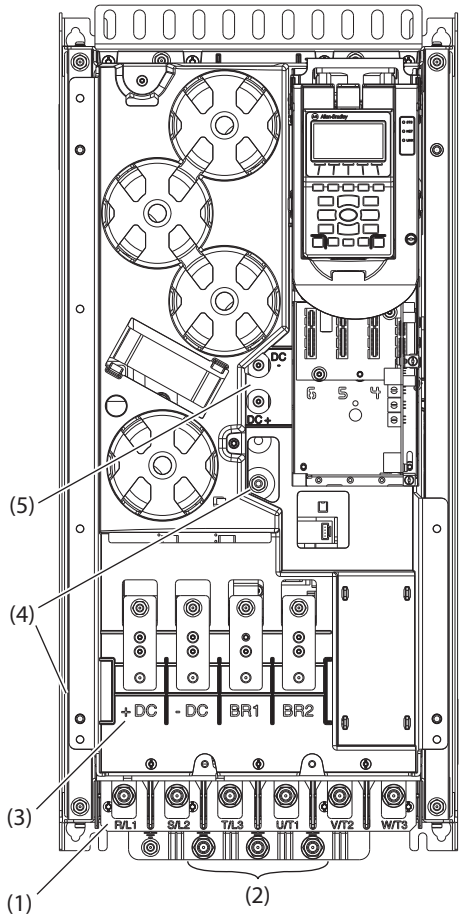
Wall Mount Frame 5



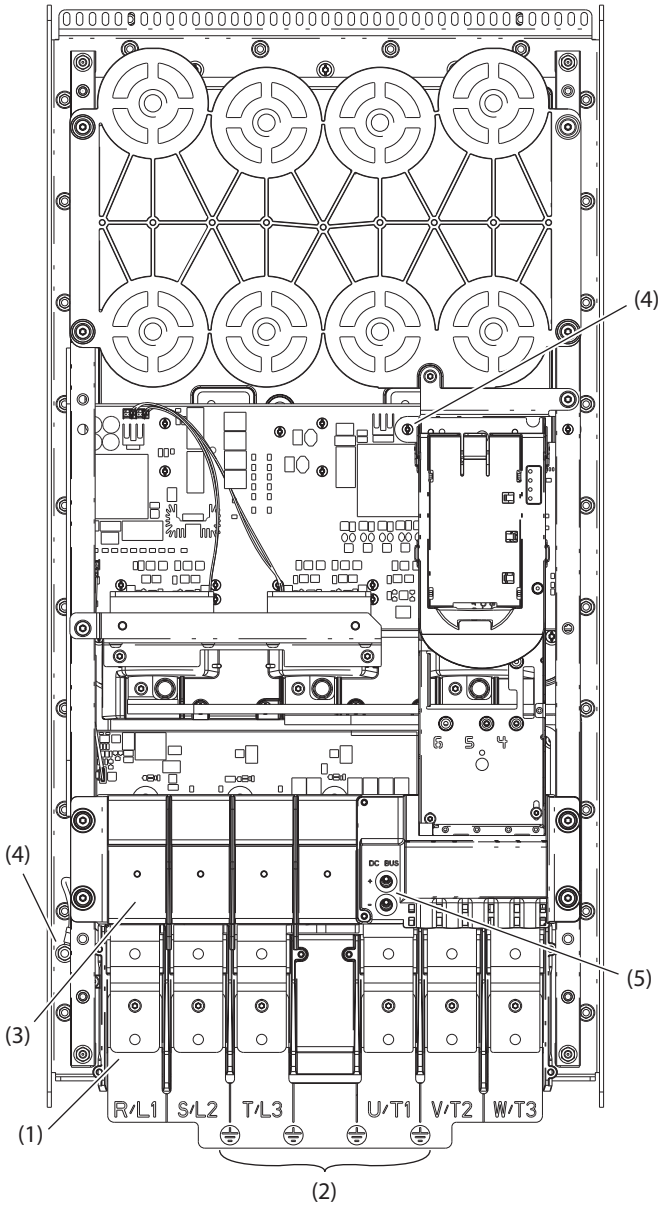
No.	Name	Description
(1)	Power Terminal Block	R/L1, S/L2, T/L3, BR1, BR2, +DC, -DC, U/T1, V/T2, W/T3
(2)	PE Grounding Studs	Terminating point to chassis ground for incoming AC line and motor shields.
(3)	PE-A and PE-B	MOV and CMC Jumpers

Wall Mount Frames 6 and 7 Power Terminal and Termination Point Locations

Wall Mount Frame 6



Wall Mount Frame 7

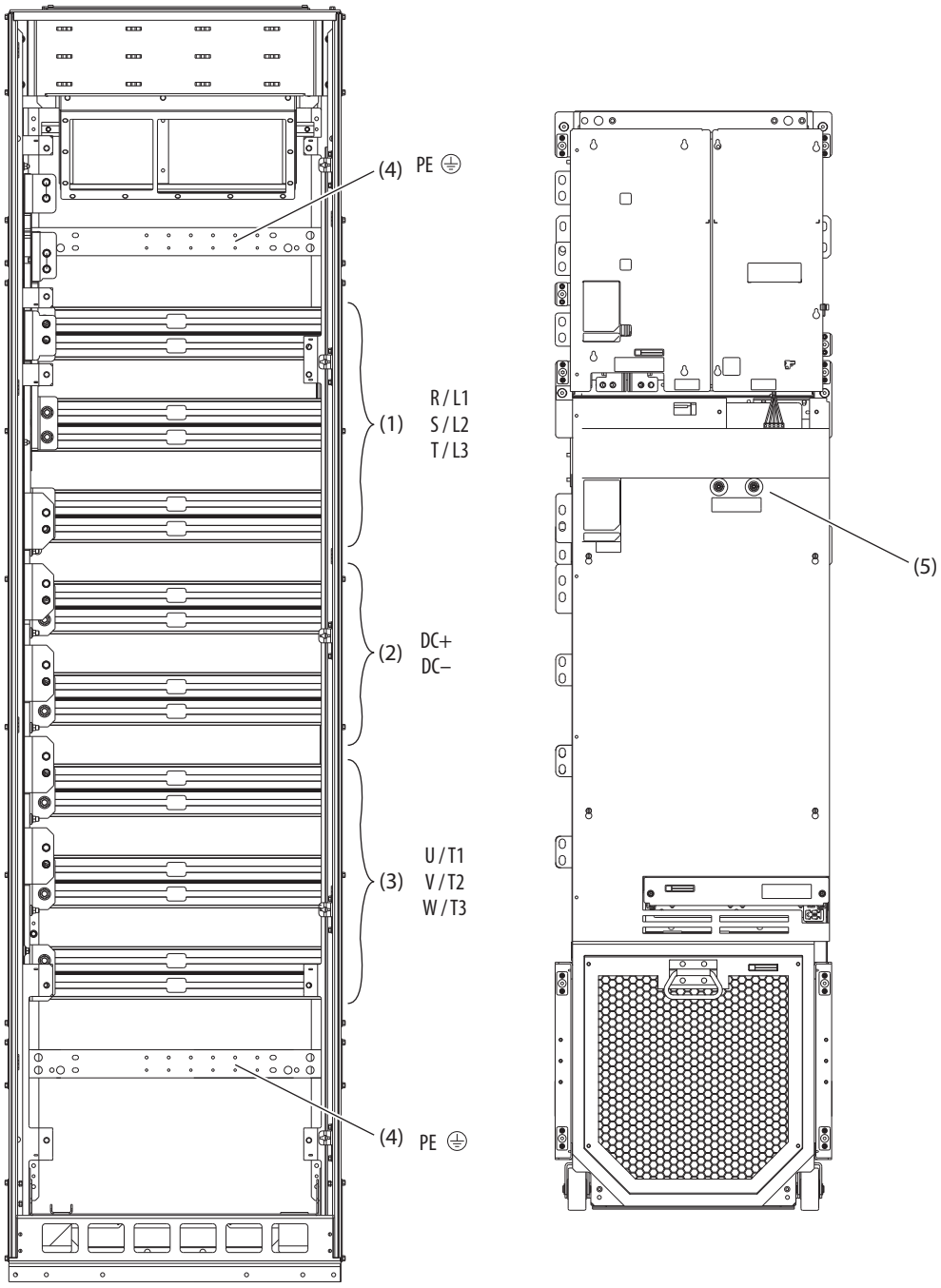


400/480V drives shown.

No.	Name	Description
(1)	Power Terminals	R/L1, S/L2, T/L3, U/T1, V/T2, W/T3
(2)	PE Grounding Studs	Terminating point to chassis ground for incoming AC line and motor shield.
(3)	DC Bus and Brake Terminals	+DC, -DC, BR1, BR2 (Optional)
(4)	PE-A and PE-B	MOV and CMC Jumpers
(5)	DC+ and DC-	Bus Voltage Test Points

Floor Mount Frames 8 and Larger Bus Bar Locations, AC Input Drives

Floor Mount Frame 8



No.	Name	Description
(1)	Power Bus	R/L1, S/L2, T/L3 (Drive only.)
(2)	DC Bus	DC+, DC- (The DC Bus is included with frame 9 and 10 drives. Frame 8 drives require the field installed kit 20-750-BUS1A-F8.)
(3)	Power Bus	U/T1, V/T2, W/T3 (Drive only or Cabinet Options Bay without power output options.)
(4)	PE Grounding Bar	Terminating point to chassis ground for incoming AC line and motor shield.
(5)	DC+ and DC-	Bus Voltage Test Points

Power Jumpers

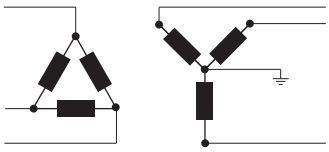
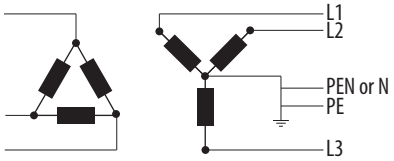
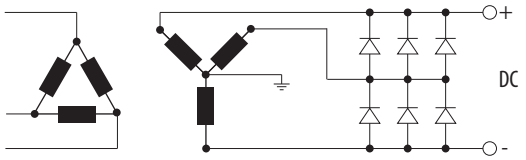
IMPORTANT PowerFlex 750-Series drives, frames 1…7, leave the factory with jumpers PE-A and PE-B in one of two possible configurations. PowerFlex 750-Series drives, frames 8…10, leave the factory with jumpers PE-A1, PE-A2, and PE-B in one of two possible configurations. Reconfigure these jumpers based on the power source type available.

Solid Ground Power Sources

Jumper Configuration for solid ground power sources.

Frames 1…7	
Jumper PE-A (MOV / Input Filter Caps)	**Jumper PE-B** (DC Bus Common Mode Caps)
Connected	Connected

Frames 8…10		
Jumper PE-A1 (MOV)	**Jumper PE-A2** (Input Filter Caps)	**Jumper PE-B** (DC Bus Common Mode Caps)
Connected	Connected	Connected

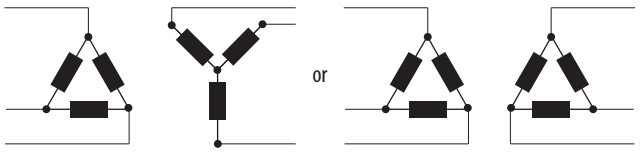
AC Fed Solidly Grounded		DC fed from passive rectifier that has a Solidly Grounded AC Source
		
Delta/Wye with Grounded Wye Neutral	TN-S Five-wire System	Delta/Wye with Grounded Wye Neutral

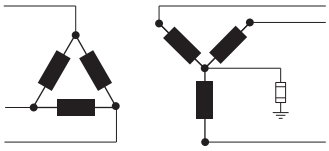
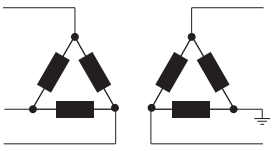
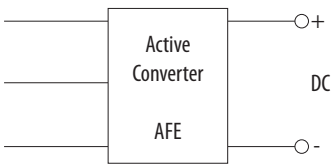
Non-Solid Ground Power Sources

Jumper Configuration for non-solid ground power sources.

Frames 1…7	
Jumper PE-A (MOV / Input Filter Caps)	**Jumper PE-B** (DC Bus Common Mode Caps)
Disconnected	Disconnected

Frames 8…10		
Jumper PE-A1 (MOV)	**Jumper PE-A2** (Input Filter Caps)	**Jumper PE-B** (DC Bus Common Mode Caps)
Disconnected	Disconnected	Disconnected

AC Fed Ungrounded

Ungrounded Secondary

Non-solid Impedance Ground	Non-solid B-Phase Ground	Any Active Converter/Active Front End
		
High-resistance Ground	Delta/Delta with Grounded Leg	

Power Jumper Locations

Wall/flange mount frames 1, 6, and 7 and floor mount frames 8...10 use jumper wires to complete an electrical connection when installed.

Wall/flange mount frames 2...5 use jumper screws to complete an electrical connection when installed.

Table 1 - Power Jumper Locations for Frames 1...10

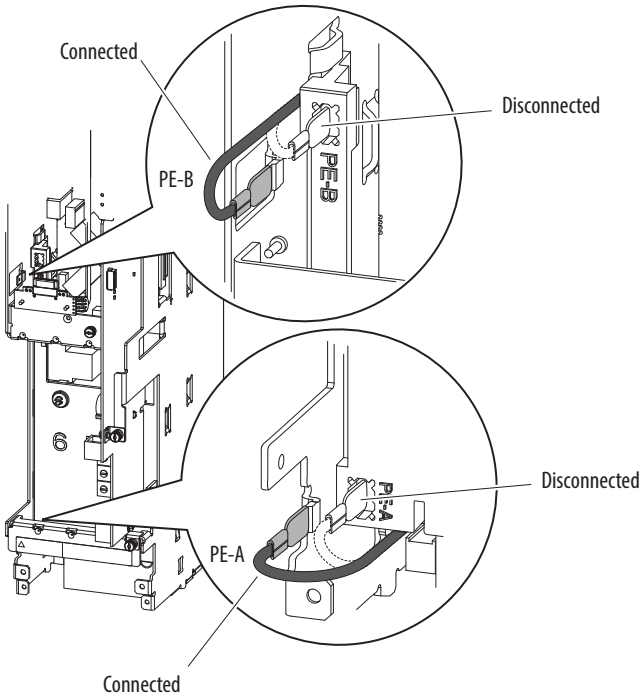
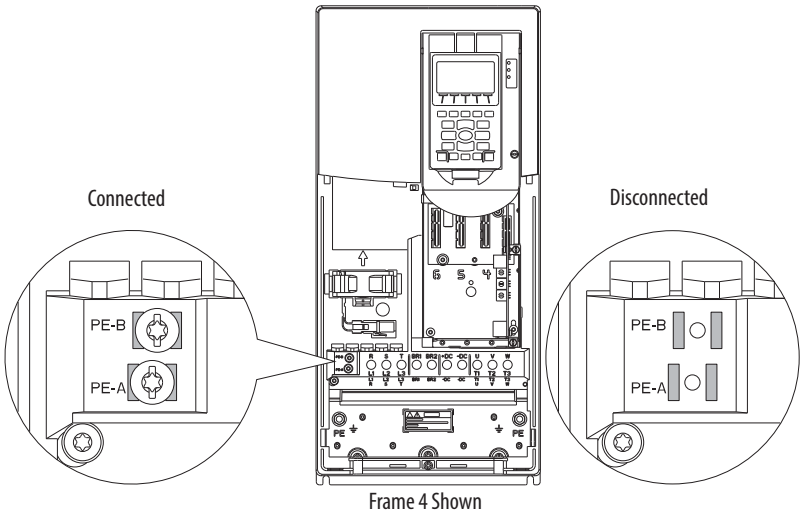
Drive	Jumper Locations
Frame 1 Spade Connectors	
Frames 2...5 Screw Connectors • Torque: 1.36 N•m (12.0 lb•in) • Tool: 6.4 mm (0.25 in.) flat or T15 Hexalobular	 Frame 4 Shown

Table 1 - Power Jumper Locations for Frames 1…10 ***(Continued)***

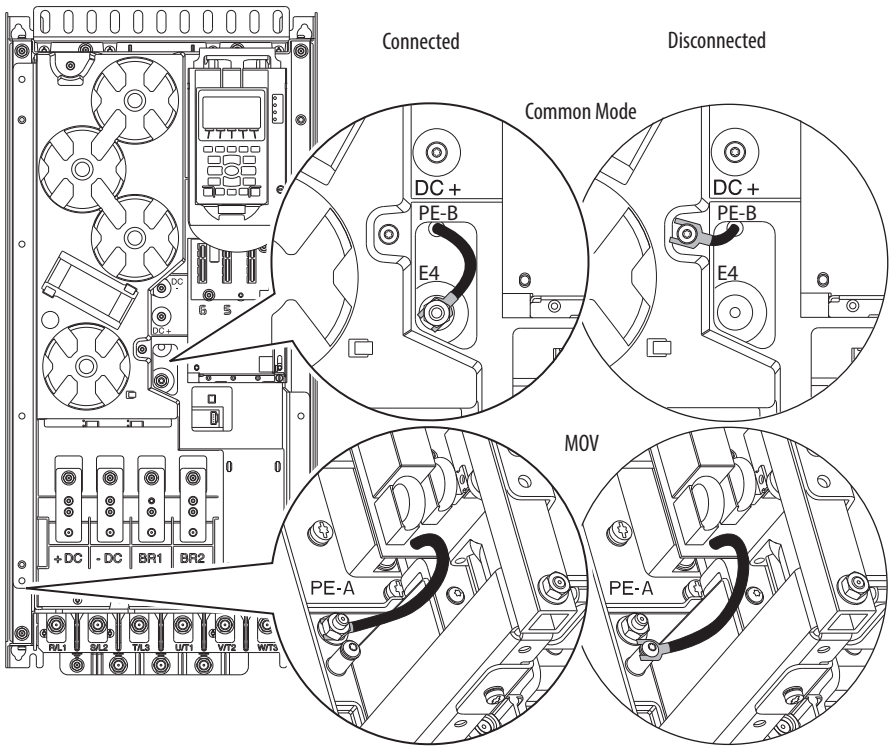
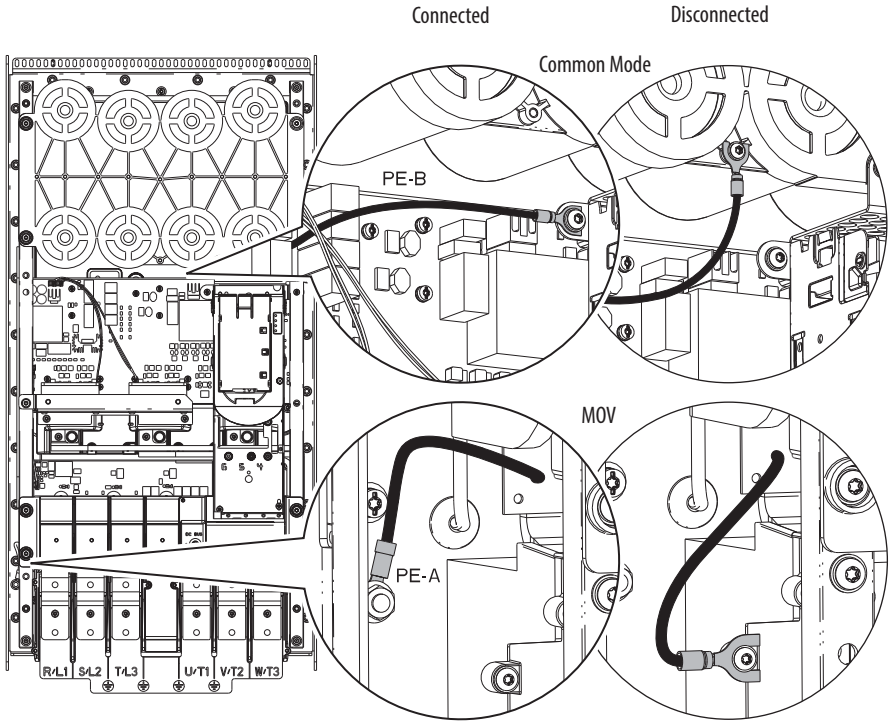
Drive	Jumper Locations
Frame 6 Wire Connectors • Torque: 1.36 N•m (12.0 lb•in) • Tools: 7 mm hex socket and T20 Hexalobular	
Frame 7 Wire Connectors • Torque: 1.36 N•m (12.0 lb•in) • Tools: 7 mm hex socket and T20 Hexalobular	

Table 1 - Power Jumper Locations for Frames 1…10 ***(Continued)***

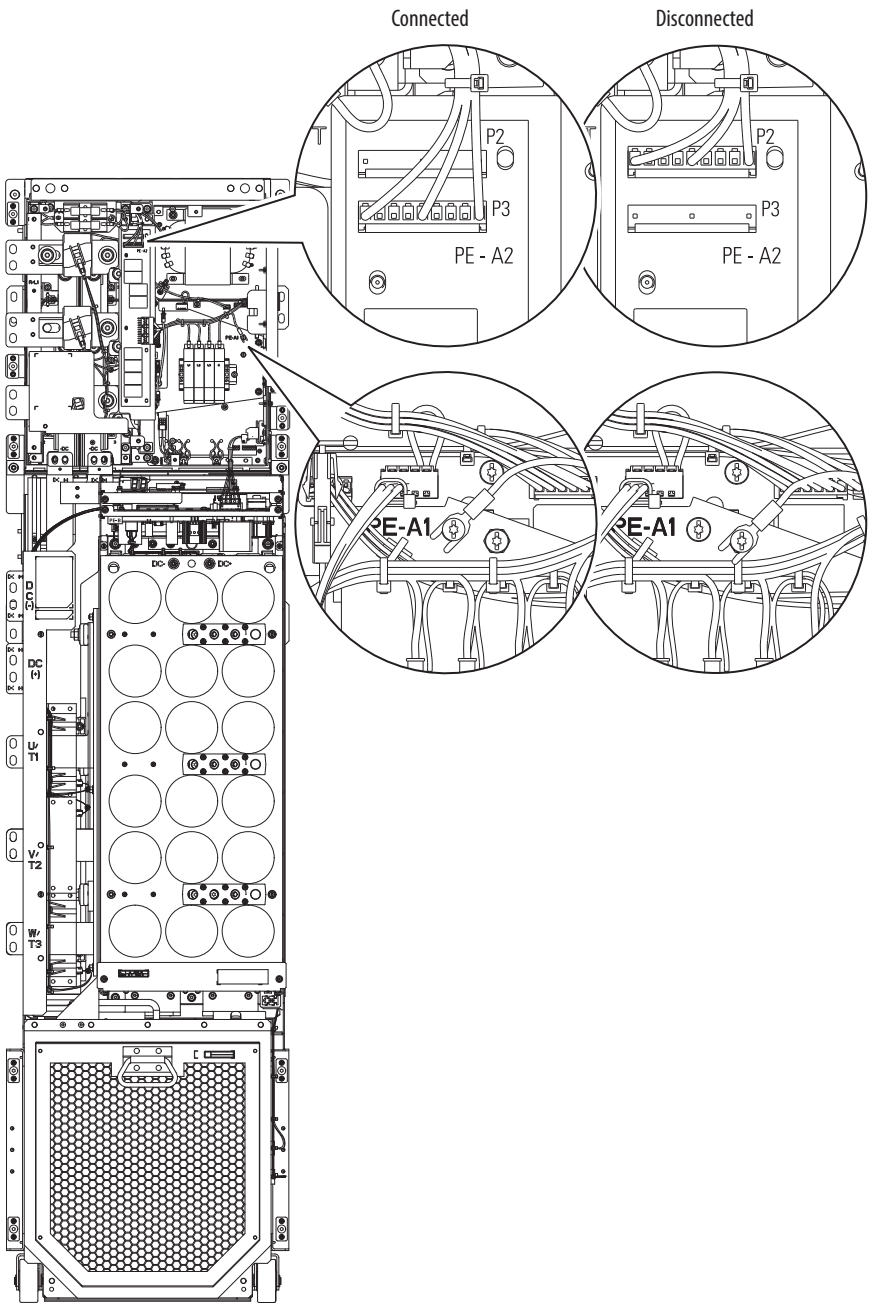
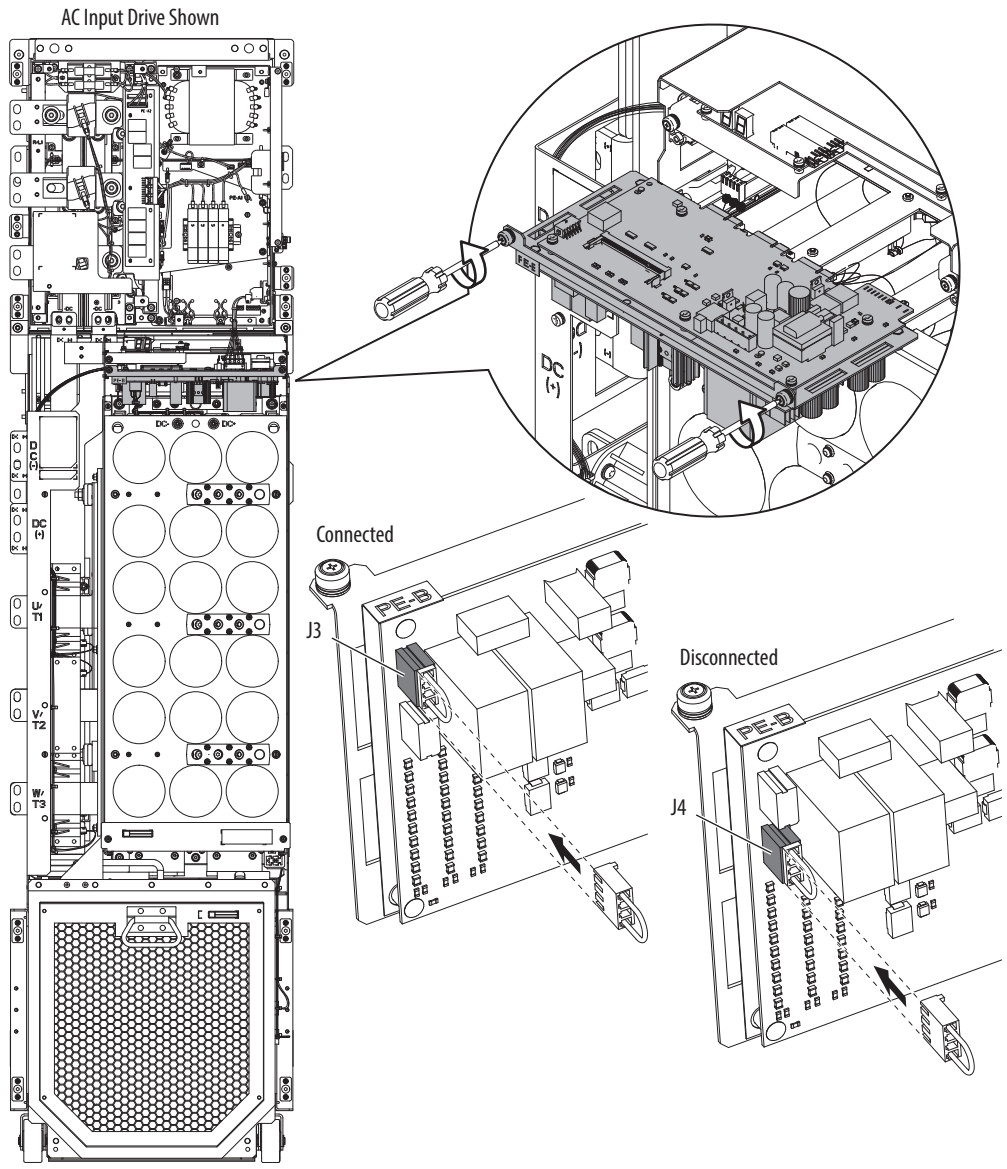
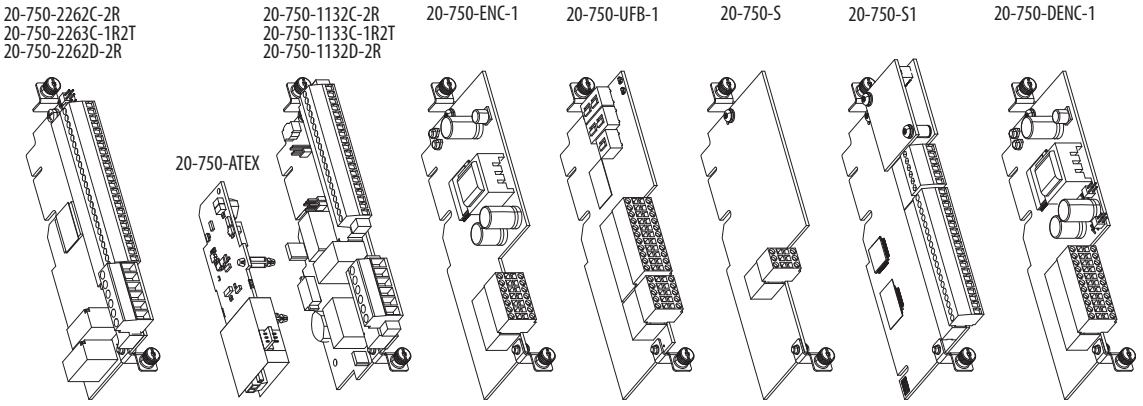
Drive	Jumper Locations
Frames 8…10 PE-A1 Wire Connector • Torque: 1.8 N•m (16.0 lb•in) • Tool: T20 Hexalobular PE-A2 Plug-type Connector	

Table 1 - Power Jumper Locations for Frames 1…10 ***(Continued)***

Drive	Jumper Locations
Frames 8…10 PE-B Plug-type Connector • Tray Torque: 1.86 N•m (16.0 lb•in) • Tool: T20 Hexalobular	

Identify Option Modules and Compatible Ports



Option Module Cat. No. 20-750-	PowerFlex 753 Drives						PowerFlex 755 Drives							
	Frame 1 Ports			Frame 2…7 Ports			Frame 1 Ports			Frame 2…10 Ports				
	6	5	4	6	5	4	6	5	4	8	7	6	5	4
2262C-2R, 2263C-1R2T, 2262D-2R	**No**	Yes	Yes	Yes	Yes	Yes	**No**	Yes	Yes	Yes	Yes	Yes	Yes	Yes
1132C-2R, 1133C-1R2T, 1132D-2R	**No**	Yes	Yes	Yes	Yes	Yes	**No**	Yes	Yes	Yes	Yes	Yes	Yes	Yes
1132C-2R, 1133C-1R2T, 1132D-2R with 20-750-ATEX installed	**No**	Yes	Yes	**No**	Yes	Yes	**No**	Yes	Yes	**No**	**No**	**No**	Yes	Yes
ENETR	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	**No**	**No**	Yes	Yes	Yes
ENC-1 (1)	**No**	Yes	Yes	Yes	Yes	Yes	**No**	Yes	Yes	Yes	Yes	Yes	Yes	Yes
UFB-1 (1)	Not Supported						**No**	Yes	Yes	**No**	**No**	Yes	Yes	Yes
S (1)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
S1 (1)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	**No**	**No**	Yes	Yes	Yes
DENC-1 (1)	**No**	Yes	Yes	Yes	Yes	Yes	**No**	Yes	Yes	Yes	Yes	Yes	Yes	Yes

(1) This publication does not cover the use of this option. Refer to the appropriate publication for more information.

Drive Device Ports

Connectors, embedded devices, and installed option modules such as I/O, communication adapters, and DeviceLogix, have unique port number assignments. Connectors and embedded devices have fixed port numbers that cannot be changed. Option modules are assigned a port number when installed.

IMPORTANT The 750-Series drive uses the term 'Port' to designate (in software) the physical location where hardware is located for ease of selecting hardware or functions to program.

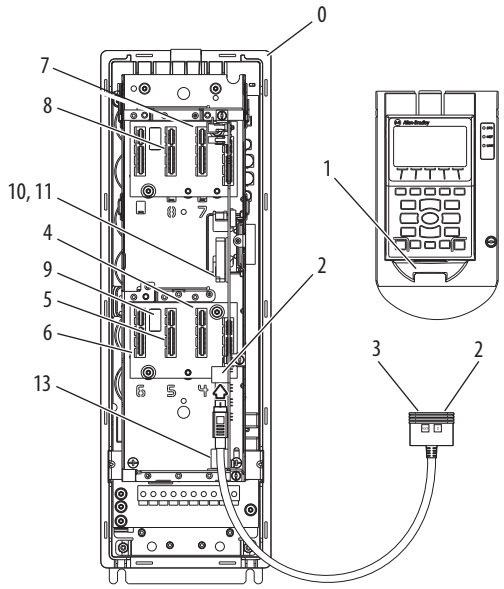


Table 2 - Drive Device Ports and Descriptions

Port	Device	Description
0	Host Drive	Fixed port for the drive.
1	HIM	Fixed port at HIM cradle connector. Splitter cable connector provides Port 01 when HIM cradle connector is unused.
2	DPI Port	Handheld or Remote HIM connection. Splitter cable connection.
3	Splitter Cable (optional)	Connects to DPI Port 2. Provides Port 2 and Port 3.
4…8	Option Modules	Available ports for option modules. Refer to the PowerFlex 750-Series AC Drives Installation Instructions, publication 750-IN001, for more information on each option's port recommendations. **Important:** Ports 7 and 8 are available on PowerFlex 755 Frame 2 drives and larger only. PowerFlex 755 Frame 1 drives and 753 drives do not support Ports 7 and 8.
9	Auxiliary Power Supply Option Module	Designated port for the Auxiliary Power Supply when connected via cable. (PowerFlex 755 Frame 1 and 753 drives only.)
10	Inverter	Fixed port for Inverter (PowerFlex 755 Frame 8 drives and larger only).
11	Converter	Fixed port for Converter (PowerFlex 755 Frame 8 drives and larger only).
12	Reserved for future use.	
13	EtherNet/IP	Fixed port for embedded EtherNet/IP (PowerFlex 755 drives only).

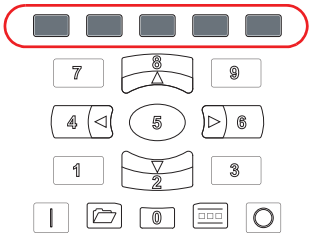
HIM Overview

See the PowerFlex 20-HIM-A6 and 20-HIM-C6S HIM (Human Interface Module) User Manual, publication 20HIM-UM001 for more information on the HIM.

The keypad consists of soft keys, navigation and number keys, and single-function keys, which are described in their respective subsections that follow.

Soft Keys

The soft keys on the HIM are located at the top of the keypad and highlighted in the figure. Depending on the screen being displayed or the data entry mode being used, a soft key name and its function changes. When a dynamic soft key (up to a maximum of five keys) is active, its present function and corresponding Soft Key Label is shown at the bottom of the HIM screen.



Navigation and Number Keys

The five blue multi-function keys (2, 4, 5, 6, and 8) shown in the figure are used to do the following:

- Enter their respective numeric value
- Scroll menus/screens
- Perform corresponding functions displayed in the Data Area.

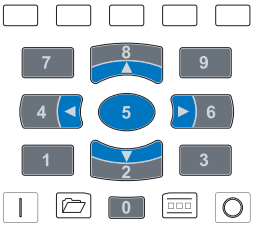


Table 3 - Navigation and Number Keys

Multi-function Key	Name	Function
	2/Down Arrow	• Enters the numeric value '2'. • Scrolls down to select an item.
	4/Left Arrow	• Enters the numeric value '4'. • Scrolls left to select an item.
	5/Enter	• Enters the numeric value '5'. • Displays the next level of a selected menu item. • Enters new values. • Performs intended actions.
	6/Right Arrow	• Enters the numeric value '6'. • Scrolls right to select an item.
	8/Up Arrow	• Enters the numeric value '8'. • Scrolls up to select an item.

The five gray number keys (0, 1, 3, 7, and 9) are used only to enter their respective numeric value.

Single-function Keys

There are four single-function keys, which are highlighted below and listed in the following table. Each single-function key always performs only its dedicated function.

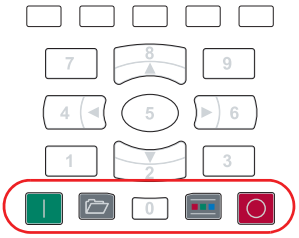


Table 4 - Single-function Keys

Single-function Key	Name	Function
	Start	Starts the drive.
(1)	Folders	Accesses folders for parameters, diagnostics, memory functions, preferences, and other tasks.
(1)	Controls	Accesses jog, direction, auto/manual, and other control functions.
	Stop	• Stops the drive or clears a fault. • This key is always active. • This key is controlled by drive parameter 307 [Start Stop Mode].

(1) During drive startup these keys are temporarily inactive.

Soft Key Labels

The soft key labels identify the present function of a corresponding soft key on the keypad. Different screens can show different soft key labels.

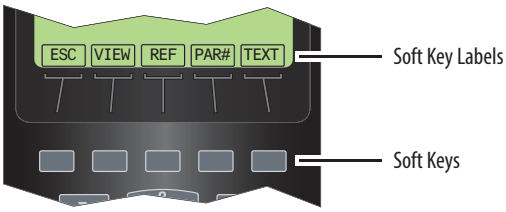


Table 5 - Soft Key Label Explanation

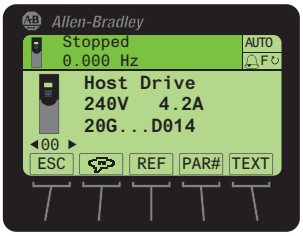
Soft Key Label	Name	Function
.	Decimal Point	Adds decimal point to the right-most position of a numeric value.
←	Backspace	Deletes the character to the left of the cursor.
+ / -	Sign	Changes the sign of a parameter value.
#	Number	Selects the Direct Numeric Entry Method to change PowerFlex 750-Series drive parameter associations.
	Language	Directly accesses the Select Language To Use screen.
▲	Scroll Up	• Scrolls up through display lines. • Increases a value.
▼	Scroll Down	• Scrolls down through display lines. • Decreases a value.
◀	Scroll Left	Scrolls left through display lines.
▶	Scroll Right	Scrolls right through display lines.
ACK	Acknowledge	Acknowledges the fault or alarm on the pop-up screen, stops the backlight from flashing, and keeps the pop-up screen active.
ALL	All	• Clears all faults, alarms or events when a pop-up box appears from a queue screen. • Restores all Host or Port device parameters to factory defaults.

Table 5 - Soft Key Label Explanation ***(Continued)***

Soft Key Label	Name	Function
CLR	Clear	• Deletes an entire text string. • Displays the Select Action pop-up box used to clear the selected fault, alarm or event, or the entire fault, alarm or event queue.
DEL	Delete	Deletes a highlighted character.
EDIT	Edit	• Accesses a displayed parameter to edit. • Accesses the Edit Process Display screen.
END	End	• Displays the end (least recent) fault, alarm or event in a queue • Scrolls to the end line of data on the Device Version information screen.
ENTER	Enter	• Displays the next level of a selected menu item. • Enters new values. • Performs the intended action.
ESC	Escape	• Cancels port verification conflict pop-up box during procedure to resolve a conflict. • Cancels the existing screen and returns to the previous screen. • Cancels an entry. • Cancels pop-up Fault Display screen. • Displays the time zone groups list screen (only when the Date/Time Set Edit Mode screen is shown).
EXP	Exponent	Allows data entry using scientific notation for 32-bit REAL (floating point) values.
FIX	Fix	Fixes 'Changed' or 'Requires Configuration' port verification conflicts upon powerup.
INFO	Information	• Shows additional information about a selected port verification conflict upon powerup. • Shows additional information about Set Default actions.
INS	Insert	Inserts a space to the left of a highlighted character.
LINK	Link	Displays a Link Edit pop-up box to link parameters (only PowerFlex 7-Class drives).
LOWER	Lower	Displays the lower 16 bits (bits 0…15) of a 32-bit Bit-type parameter.
MOST	Most	Restores most Host or Port device parameters to factory defaults.
PAR#	Parameter Number	Navigates directly to a parameter.
PGDN	Page Down	Scrolls down to the next page of data lines on the Device Version information screen.
PGUP	Page Up	Scrolls up to the previous page of data lines on the Device Version information screen.
REF	Reference	Enters the speed reference for the Host Drive.
RESET	Reset	Resets the Process screen's displayed monitoring items to the factory default monitoring items.
TEXT	Text	Edits user-definable text for the device selected.
TOP	Top	• Displays the top (most recent) fault, alarm or event in a queue. • Scrolls to the top line of data on the Device Version information screen.
UPPER	Upper	Displays the upper 16 bits (bits 16…31) of a 32-bit Bit-type parameter.
VIEW	View	• Toggles between select screens and views. • Displays the time stamp screen from a fault, alarm or event queue screen.
ZONES	Zones	Displays the Select Time Zone screen.

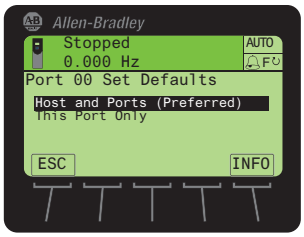
Resetting Factory Defaults

1. Access the Status screen.

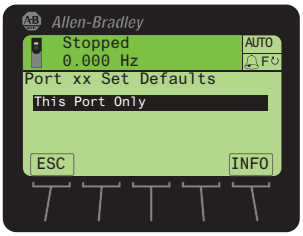


Status Screen

2. Use the 4 or 6 key to scroll to the port of the device whose parameters you want to set to factory defaults (for example, Port 00 for the host drive or the respective port number for one of the drive's connected peripherals).
3. Press the folder key to display its last-viewed folder.
4. Use the 4 or 6 key to scroll to the Memory folder.
5. Use the 2 or 8 key to select **Set Defaults**.
6. Press the 5 (Enter) key to display the Set Defaults pop-up box (see examples below).



For Host Drive



For Connected Peripheral

7. Use the 2 or 8 key to select the appropriate action.
   - Host and Ports (Preferred): Selects the host device and all ports for a factory default action.
   - This Port Only: Selects only this port for a factory default action.

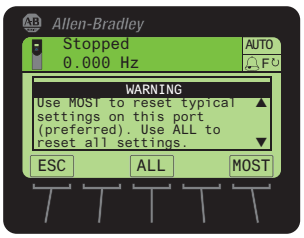
TIP For a description of a selected menu item, press the Info soft key.

8. Press the 5 (Enter) key to display the warning pop-up box to reset defaults.

'Host and Ports (Preferred)' Pop-Up Box

Press the ENTER soft key to affirm and set most parameters for the host drive and port devices to factory defaults. Press the ESC soft key to cancel.

'This Port Only' Pop-Up Box



Press the MOST soft key to set **most** settings for the selected port device to factory defaults. Press the ESC soft key to cancel.

IMPORTANT Setting the drive to factory default results in Fault 48 "System Defaulted". This is normal and expected.

Typical Speed Reference Examples

User Adjustable at Drive

The Control screen (shown below) is used to directly control the drive. It displays vertical bar graphs of the drive's Speed Reference and Feedback values, and a Key Function Map that corresponds to the navigation/number keys for drive control. Press the (Controls) key to display the Control screen.

IMPORTANT To navigate from the Control screen to another HIM menu screen, you must always press the ESC *soft key* to deactivate the Control screen and display the previous screen.

IMPORTANT The HIM can be located in Port 1, Port 2, or Port 3 (default is Port 1). Port 2 and Port 3 can be used for door-mounted or remote-mounted HIMs. See the following table for parameter 545 [SXX] setup for speed reference. (add from Roman's chart in the Word document P871, P872, P873)

Table 6 - Speed Reference Parameter Settings

No.	Drive Parameter Name	User Setting	Default	Value/Options	Notes
545	Spd Ref A Sel	877	871	P871 = Port 1 HIM reference P877 = Port 13 reference	Selects the source parameter number for the speed reference while in "Auto" (typical) mode. Reference value from port devices. For a speed reference from a communication network, set this parameter to Port 0 and select P871…877 [Port_*n*_Reference] as appropriate. **Important Example**: 20-COMM-E, EtherNet/IP Communication Adapter = Dint for speed reference multiplied by 1,000 (60 Hz = 60,000 and 1750 RPM = 1,750,000).

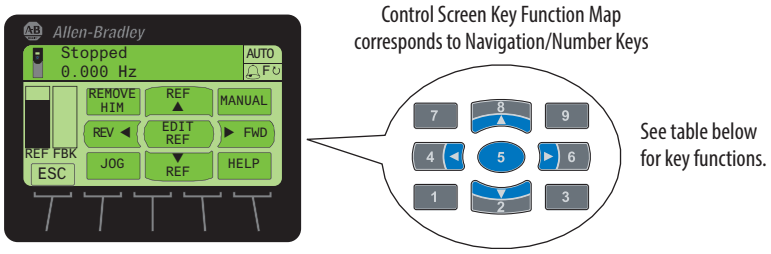


Table 7 - Control Screen Soft Key

Label	Name	Function
ESC	Escape	Deactivates the Control Screen and reverts back to the previous screen.

Table 8 - Control Screen Navigation/Number Keys

Label	Key	Function
JOG		Jogs the host drive.
▼ REF		Decreases the speed reference for the host drive.
HELP		Displays Rockwell Automation Drives Technical Support direct phone number, website address, and email address.
REV ◀		Sets the direction to reverse for the host drive.
EDIT REF		Enables direct data entry of the speed reference for the host drive.
▶ FWD		Sets the direction to forward for the host drive.
REMOVE HIM		Allows HIM removal without causing a fault if the HIM is not the last controlling device. (The REMOVE HIM label is not available when the HIM has manual control of the host drive. In this case, a fault occurs if the HIM is removed.)
REF ▲		Increases the speed reference for the host drive.
MANUAL		Switches between Auto and Manual modes.

Table 9 - Start and Stop Keys

Single-function Key	Name	Function
	Start	Starts the drive.
	Stop	• Stops the drive or clears a fault. • This key is always active. • This key is controlled by drive parameter 307 [Start Stop Mode].

Connections on PowerFlex 753 Main Control Board

Terminal block TB1 and the input mode jumpers are mounted directly on the main control board.

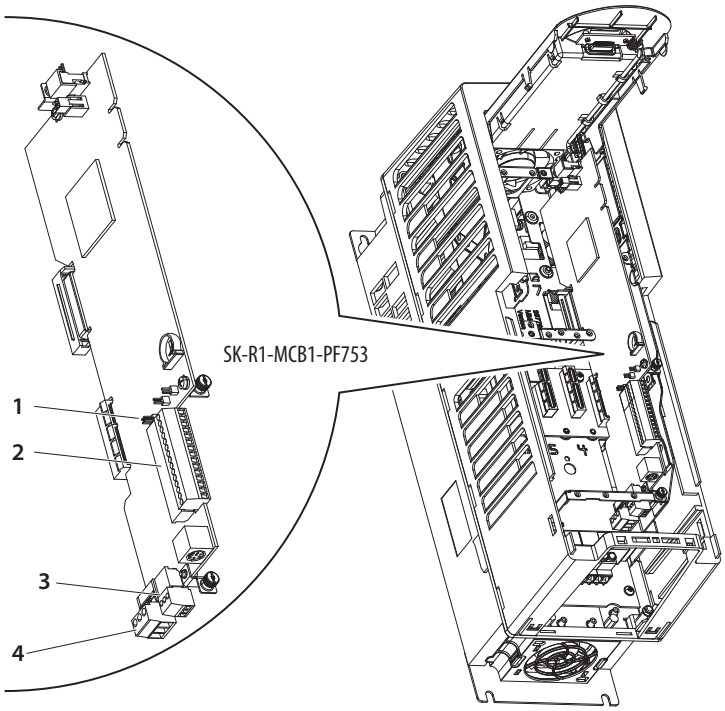


Table 10 - 753 Main Control Board Details

No.	Name	Description
1	Jumper J4 Input Mode	Analog input mode jumper. Selects voltage mode or current mode.
2	TB1	I/O terminal block.
3	TB3	Digital input terminal block.
4	TB2	Relay terminal block.

Table 11 - J4 Input Mode Jumper

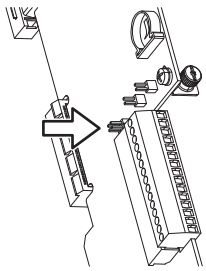
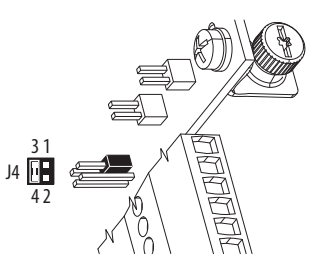
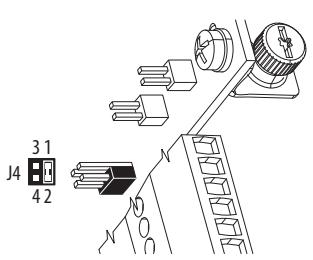
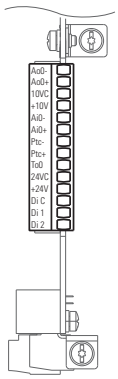
Jumper Position	Voltage Mode	Current Mode
		

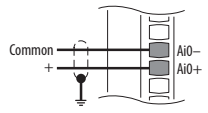
Table 12 - TB1 Terminal Designations



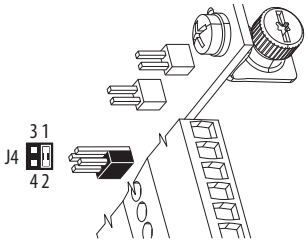
Terminal	Name	Description	Related Param
Ao0–	Analog Out 0 (–)	Bipolar, ±10V (1), 11 bit & sign, 2 k ohm minimum load. 4-20 mA (1), 11 bit & sign, 400 ohm maximum load.	270
Ao0+	Analog Out 0 (+)		
10VC	10 Volt Common	For (+) 10 Volt references. 2k ohm minimum.	
+10V	+10 Volt Reference		
Ai0–	Analog Input 0 (–)	Isolated (2), bipolar, differential, 11 bit & sign. Voltage Mode:(3) ±10V @ 88k ohm input impedance. Current Mode:(3) 0-20 mA @ 93 ohm input impedance	255
Ai0+	Analog Input 0 (+)		
Ptc–	Motor PTC (–)	Motor protection device (Positive Temperature Coefficient).	250
Ptc+	Motor PTC (+)		
T0	Transistor Output 0	Open drain output, 48V DC, 250 mA maximum load.	
24VC	24 Volt Common	Drive supplied logic input power. 150 mA maximum	
+24V	+24 Volt DC		
Di C	Digital Input Common	24V DC (30V DC Max.) - Opto isolated High State: 20…24V DC Low State: 0…5V DC	220
Di 1	Digital Input 1		
Di 2	Digital Input 2		

(1) Mode is selected by parameter only.
(2) Differential Isolation - External source must be maintained at less than 160V with respect to PE. Input provides high common mode immunity.
(3) Mode is selected by jumper J4.

Table 13 - 0…20 mA Analog Input - Unipolar Speed Reference



753 Main Control Board TB1



Jumper set to current mode.

Set Direction Mode
Port 0: P308 [Direction Mode] = 0 "Unipolar"

Set Selection
Port 0: P545 [Spd Ref A Sel] = Port 0: P260 [Anlg In0 Value]

Adjust Scaling
Port 0: P261 [Anlg In0 Hi] = 20 mA
Port 0: P262 [Anlg In0 Lo] = 0 mA
Port 0: P547 [Spd Ref A AnlgHi] = 60 Hz
Port 0: P548 [Spd Ref A AnlgLo] = 0 Hz

View Results
Port 0: P260 [Anlg In0 Value]
Port 0: P592 [Selected Spd Ref]

Table 14 - 0…+10V Analog Input - Unipolar Speed Reference

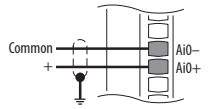
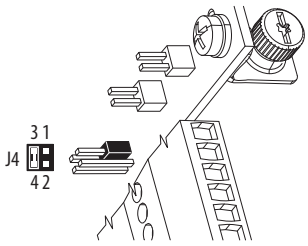
 753 Main Control Board TB1	**Set Direction Mode** Port 0: P308 [Direction Mode] = 0 "Unipolar" **Set Selection** Port 0: P545 [Spd Ref A Sel] = Port 0: P260 [Anlg In0 Value]
 Jumper set to voltage mode.	**Adjust Scaling** Port 0: P261 [Anlg In0 Hi] = 10 Volt Port 0: P262 [Anlg In0 Lo] = 0 Volt Port 0: P547 [Spd Ref A AnlgHi] = 60 Hz Port 0: P548 [Spd Ref A AnlgLo] = 0 Hz **View Results** Port 0: P260 [Anlg In0 Value] Port 0: P592 [Selected Spd Ref]

Table 15 - 10k Ohm Potentiometer - Unipolar Speed Reference

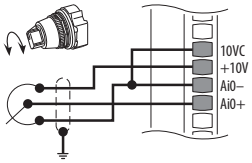
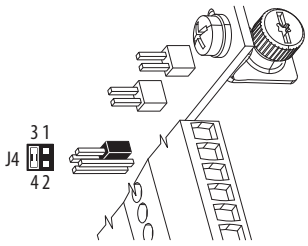
 753 Main Control Board TB1	**Set Direction Mode** Port 0: P308 [Direction Mode] = 0 "Unipolar" **Set Selection** Port 0: P545 [Spd Ref A Sel] = Port 0: P260 [Anlg In0 Value]
 Jumper set to voltage mode.	**Adjust Scaling** Port 0: P261 [Anlg In0 Hi] = 10 Volt Port 0: P262 [Anlg In0 Lo] = 0 Volt Port 0: P547 [Spd Ref A AnlgHi] = 60 Hz Port 0: P548 [Spd Ref A AnlgLo] = 0 Hz **View Results** Port 0: P260 [Anlg In0 Value] Port 0: P592 [Selected Spd Ref]

Table 16 - 2-Wire Control on PF753 Main Control Board

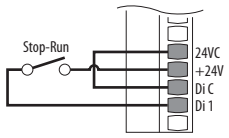
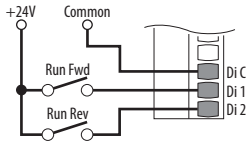
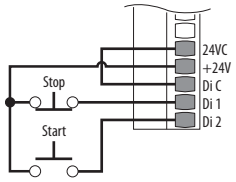
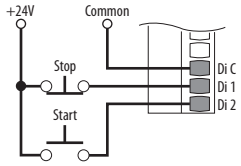
Non-Reversing - Internal Supply  753 Main Control Board TB1	**Set Direction Mode** Port 0: P308 [Direction Mode] = 2 "Rev Disable" **Set Selection** Port 0: P163 [DI Run] = Port 0: P220 [Digital In Sts], bit 1 = Digital In 1 **View Results** Port 0: P220 [Digital In Sts] Port 0: P935 [Drive Status 1]
Reversing - External Supply  753 Main Control Board TB1	**Set Direction Mode** Port 0: P308 [Direction Mode] = 0 "Unipolar" **Set Selection** Port 0: P164 [DI Run Forward] = Port 0: P220 [Digital In Sts], bit 1 = Digital In 1 Port 0: P165 [DI Run Reverse] = Port 0: P220 [Digital In Sts], bit 2 = Digital In 2 **View Results** Port 0: P220 [Digital In Sts] Port 0: P935 [Drive Status 1]

Table 17 - 3-Wire Control on PF753 Main Control Board

Internal Supply  753 Main Control Board TB1	**Set Selection** Port 0: P158 [DI Stop] = Port 0: P220 [Digital In Sts], bit 1 = Digital In 1 Port 0: P161 [DI Start] = Port 0: P220 [Digital In Sts], bit 2 = Digital In 2 **View Results** Port 0: P220 [Digital In Sts] Port 0: P935 [Drive Status 1]
External Supply  753 Main Control Board TB1	**Set Selection** Port 0: P158 [DI Stop] = Port 0: P220 [Digital In Sts], bit 1 = Digital In 1 Port 0: P161 [DI Start] = Port 0: P220 [Digital In Sts], bit 2 = Digital In 2 **View Results** Port 0: P220 [Digital In Sts] Port 0: P935 [Drive Status 1]

Connections on 11-Series Expansion I/O Module

Terminal block TB1 and the input mode jumpers are mounted on the option module installed in the drive.

11-Series I/O Module

Table 18 - Analog Input Mode Jumpers

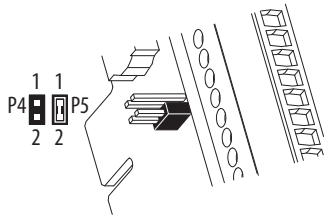
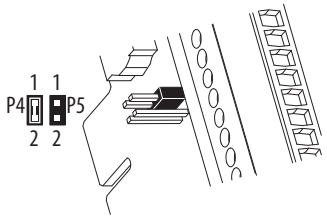
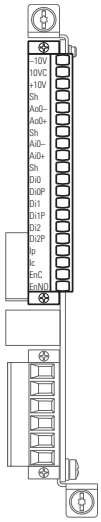
Voltage Mode	Current Mode
	

Table 19 - TB1 Terminal Designations



Terminal	Name	Description	Related Param (4)
–10V	–10 Volt Reference	Negative 10V DC for analog inputs. 2k ohm minimum.	
10VC	10 Volt Common	For (–) and (+) 10 Volt references.	
+10V	+10 Volt Reference	Positive 10V DC for analog inputs. 2k ohm minimum.	
Sh	Shield	Terminating point for wire shields when an EMC plate or conduit box is not installed.	
Ao0–	Analog Out 0 (–)	Bipolar, ±10V, 11 bit & sign, 2 k ohm minimum load. 4-20 mA, 11 bit & sign, 400 ohm maximum load.	75 on Port X
Ao0+	Analog Out 0 (+)		
Sh	Shield	Terminating point for wire shields when an EMC plate or conduit box is not installed.	
Ai0–	Analog Input 0 (–)	Differential (2), bipolar, 11 bit & sign. Voltage Mode: ±10V @ 88k ohm input impedance. Current Mode: 0-20 mA @ 93 ohm input impedance.	50, 70 on Port X
Ai0+	Analog Input 0 (+)		
Sh	Shield	Terminating point for wire shields when an EMC plate or conduit box is not installed.	
Di0	Digital Input 0	24V DC (30V DC Max.) - Opto isolated High State: 20…24V DC 11.2 mA DC Low State: 0…5V DC 120V AC (132V AC Max.) 50/60 Hz (3) - Opto isolated High State: 100…132V AC Low State: 0…30V AC	1 on Port X
Di0P	Digital Input 0 Power(1)		
Di1	Digital Input 1		
Di1P	Digital Input 1Power(1)		
Di2	Digital Input 2		
Di2P	Digital Input 2 Power(1)		
Ip	Input Power	External 24V DC or 115V AC power supply input connections. Does not power the main control board.	
Ic	Input Common		
EnC	Enable Output	ATEX fault enable output. Used only when an ATEX option module is installed.	
EnNO			

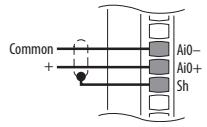
(1) Digital Inputs are either 24 Volts DC (1132C) or 115 Volts AC (1132D) based on module catalog number. Ensure applied voltage is correct for I/O module.

(2) Differential - External source must be maintained at less than 160V with respect to PE. Input provides high common mode immunity.

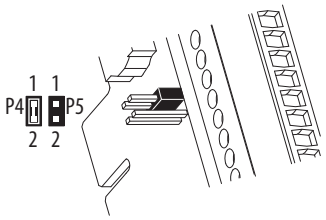
(3) For CE compliance use shielded cable. Cable length should not exceed 30 m (98 ft).

(4) I/O Module parameters also have a Port designation.

Table 20 - 0…20 mA Analog Input - Unipolar Speed Reference



11-Series I/O Module TB1



Jumper set to current mode.

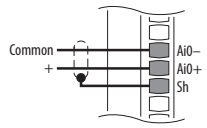
Set Direction Mode
Port 0: P308 [Direction Mode] = 0 "Unipolar"

Set Selection
Port 0: P545 [Spd Ref A Sel] = Port 4 (or port where your 11-Series I/O Module is installed), See page 10: P50 [Anlg In0 Value]

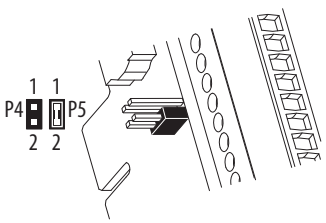
Adjust Scaling
Port 4 (or port where your 11-Series I/O Module is installed), See page 10: P51 [Anlg In0 Hi] = 20 mA
Port 4 (or port where your 11-Series I/O Module is installed), See page 10: P52 [Anlg In0 Lo] = 0 mA or 4 mA
Port 0: P547 [Spd Ref A AnlgHi] = 60 Hz
Port 0: P548 [Spd Ref A AnlgLo] = 0 Hz

View Results
Port 4 (or port where your 11-Series I/O Module is installed), See page 10: P50 [Anlg In0 Value]
Port 0: P592 [Selected Spd Ref]

Table 21 - 0…+10V Analog Input - Unipolar Speed Reference



11-Series I/O Module TB1



Jumper set to voltage mode.

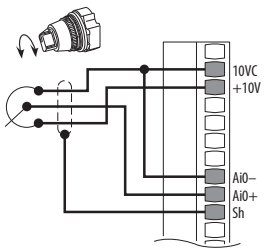
Set Direction Mode
Port 0: P308 [Direction Mode] = 0 "Unipolar"

Set Selection
Port 0: P545 [Spd Ref A Sel] = Port 4 (or port where your 11-Series I/O Module is installed), See page 10: P50 [Anlg In0 Value]

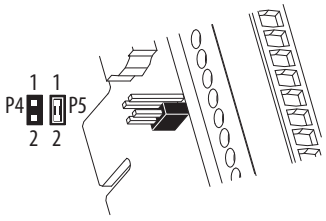
Adjust Scaling
Port 4 (or port where your 11-Series I/O Module is installed), See page 10: P51 [Anlg In1 Hi] = 10 Volt
Port 4 (or port where your 11-Series I/O Module is installed), See page 10: P52 [Anlg In1 Lo] = 0 Volt
Port 0: P547 [Spd Ref A AnlgHi] = 60 Hz
Port 0: P548 [Spd Ref A AnlgLo] = 0 Hz

View Results
Port 4 (or port where your 11-Series I/O Module is installed), See page 10: P50 [Anlg In0 Value]
Port 0: P592 [Selected Spd Ref]

Table 22 - 10k Ohm Potentiometer - Unipolar Speed Reference



11-Series I/O Module TB1



Jumper set to voltage mode.

Set Direction Mode
Port 0: P308 [Direction Mode] = 0 "Unipolar"

Set Selection
Port 0: P545 [Spd Ref A Sel] = Port 4 (or port where your 11-Series I/O Module is installed), See page 10: P50 [Anlg In0 Value]

Adjust Scaling
Port 4 (or port where your 11-Series I/O Module is installed), See page 10: P51 [Anlg In0 Hi] = 10 Volt
Port 4 (or port where your 11-Series I/O Module is installed), See page 10: P52 [Anlg In0 Lo] = 0 Volt
Port 0: P547 [Spd Ref A AnlgHi] = 60 Hz
Port 0: P548 [Spd Ref A AnlgLo] = 0 Hz

View Results
Port 4 (or port where your 11-Series I/O Module is installed), See page 10: P50 [Anlg In0 Value]
Port 0: P592 [Selected Spd Ref]

Table 23 - 2-Wire Control on 11-Series I/O Module

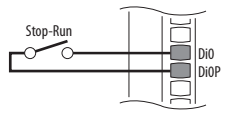
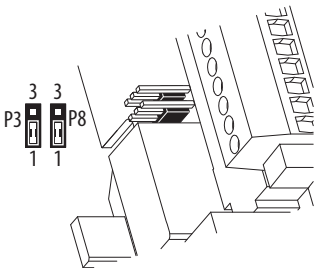
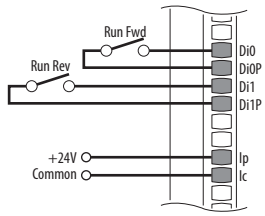
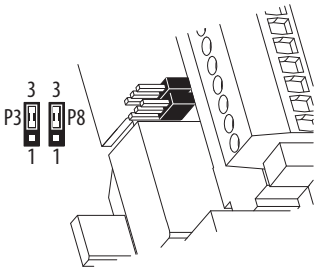
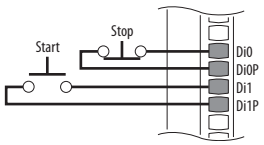
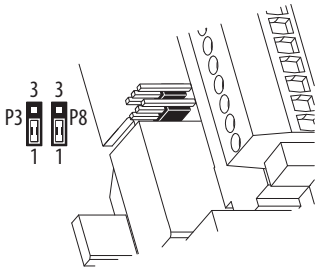
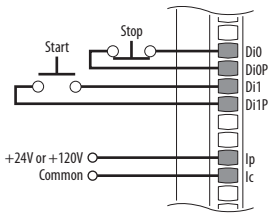
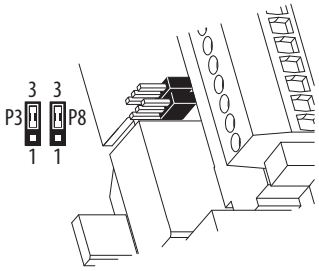
Non-Reversing - Internal Supply  11-Series I/O Module TB1  Jumpers set to internal supply source.	**Set Direction Mode** Port 0: P308 [Direction Mode] = 2 "Rev Disable" **Set Selection** Port 0: P163 [DI Run] = Port 4 (or port where your 11-Series I/O Module is installed), See page 10: P1 [Dig In Sts], bit 0 = Input 0 **View Results** Port 4 (or port where your 11-Series I/O Module is installed), See page 10: P1 [Dig In Sts] Port 0: P935 [Drive Status 1]
Reversing - External Supply  11-Series I/O Module TB1  Jumpers set to external supply source.	**Set Direction Mode** Port 0: P308 [Direction Mode] = 0 "Unipolar" **Set Selection** Port 0: P164 [DI Run Forward] = Port 4 (or port where your 11-Series I/O Module is installed), See page 10: P1 [Dig In Sts], bit 0 = Input 0 Port 0: P165 [DI Run Reverse] = Port 4 (or port where your 11-Series I/O Module is installed), See page 10: P1 [Dig In Sts], bit 1 = Input 1 **View Results** Port 4 (or port where your 11-Series I/O Module is installed), See page 10: P1 [Dig In Sts] Port 0: P935 [Drive Status 1]

Table 24 - 3-Wire Control on 11-Series I/O Module

Internal Supply  11-Series I/O Module TB1  Jumpers set to internal supply source.	**Set Selection** Port 0: P158 [DI Stop] = Port 4 (or port where your 11-Series I/O Module is installed), See page 10: P1 [Dig In Sts], bit 0 = Input 0 Port 0: P161 [DI Start] = Port 4 (or port where your 11-Series I/O Module is installed), See page 10: P1 [Dig In Sts], bit 1 = Input 1 **View Results** Port 4 (or port where your 11-Series I/O Module is installed), See page 10: P1 [Dig In Sts] Port 0: P935 [Drive Status 1]
External Supply  11-Series I/O Module TB1  Jumpers set to external supply source.	**Set Selection** Port 0: P158 [DI Stop] = Port 4 (or port where your 11-Series I/O Module is installed), See page 10: P1 [Dig In Sts], bit 0 = Input 0 Port 0: P161 [DI Start] = Port 4 (or port where your 11-Series I/O Module is installed), See page 10: P1 [Dig In Sts], bit 1 = Input 1 **View Results** Port 4 (or port where your 11-Series I/O Module is installed), See page 10: P1 [Dig In Sts] Port 0: P935 [Drive Status 1] **IMPORTANT:** Connect 24V supply only to 20-750-1132C-2R or 20-750-1133C-1R2T. Connect 120V supply only to 20-750-1132D-2R.

Connections on 22-Series Expansion I/O Module

Terminal block TB1 and the input mode jumpers are mounted on the option module installed in the drive.

22-Series I/O Module

Table 25 - Input Mode Jumpers

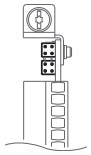
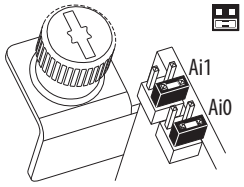
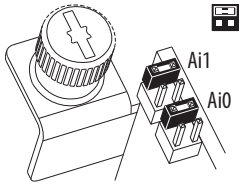
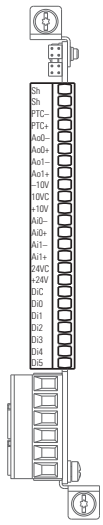
Jumper Position	Voltage Mode	Current Mode
		

Table 26 - TB1 Terminal Designations



Terminal	Name	Description	Related Param (4)
Sh	Shield	Terminating point for wire shields when an EMC plate or conduit box is not installed.	
Sh			
Ptc–	Motor PTC (–)	Motor protection device (Positive Temperature Coefficient).	40 on Port X
Ptc+	Motor PTC (+)		
Ao0–	Analog Out 0 (–)	Bipolar, ±10V, 11 bit & sign, 2 k ohm minimum load. 4-20 mA, 11 bit & sign, 400 ohm maximum load.	75 on Port X
Ao0+	Analog Out 0 (+)		
Ao1–	Analog Out 1 (–)		85 on Port X
Ao1+	Analog Out 1 (+)		
–10V	–10 Volt Reference	2k ohm minimum.	
10VC	10 Volt Common	For (–) and (+) 10 Volt references.	
+10V	+10 Volt Reference	2k ohm minimum.	
Ai0–	Analog Input 0 (–)	Isolated (2), bipolar, differential, 11 bit & sign. Voltage Mode: ±10V @ 88k ohm input impedance. Current Mode: 0-20 mA @ 93 ohm input impedance.	50, 70 on Port X
Ai0+	Analog Input 0 (+)		
Ai1–	Analog Input 1 (–)		60, 70 on Port X
Ai1+	Analog Input 1 (+)		
24VC	24 Volt Common	Drive supplied logic input power. 200 mA max. per I/O module 600 mA max per drive	
+24V	+24 Volt DC		
Di C	Digital Input Common	Common for Digital Inputs 0…5	
Di 0	Digital Input 0 (1)	24V DC (30V DC Max.) - Opto isolated High State: 20…24V DC 11.2 mA DC Low State: 0…5V DC 120V AC (132V AC Max.) 50/60 Hz (3) - Opto isolated High State: 100…132V AC Low State: 0…30V AC	1 on Port X
Di 1	Digital Input 1 (1)		
Di 2	Digital Input 2 (1)		
Di 3	Digital Input 3 (1)		
Di 4	Digital Input 4 (1)		
Di 5	Digital Input 5 (1)		

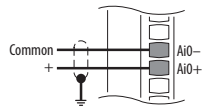
(1) Digital Inputs are either 24 Volts DC (2262C) or 115 Volts AC (2262D) based on module catalog number. Ensure applied voltage is correct for I/O module.

(2) Differential Isolation - External source must be maintained at less than 160V with respect to PE. Input provides high common mode immunity.

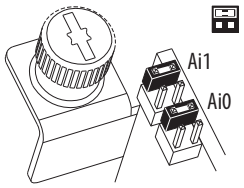
(3) For CE compliance use shielded cable. Cable length should not exceed 30 m (98 ft).

(4) I/O Module parameters also have a Port designation.

Table 27 - 0…20 mA Analog Input - Unipolar Speed Reference at Terminals Ai0±



22-Series I/O Module TB1



Jumpers set to current mode.

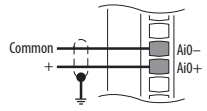
Set Direction Mode
Port 0: P308 [Direction Mode] = 0 "Unipolar"

Set Selection
Port 0: P545 [Spd Ref A Sel] = Port 4 (or port where your 22-Series I/O Module is installed), See page 10: P50 [Anlg In0 Value]

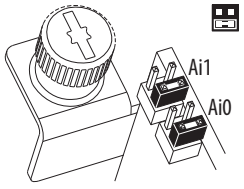
Adjust Scaling
Port 4 (or port where your 22-Series I/O Module is installed), See page 10: P51 [Anlg In0 Hi] = 20 mA
Port 4 (or port where your 22-Series I/O Module is installed), See page 10: P52 [Anlg In0 Lo] = 0 mA
Port 0: P547 [Spd Ref A AnlgHi] = 60 Hz
Port 0: P548 [Spd Ref A AnlgLo] = 0 Hz

View Results
Port 4 (or port where your 22-Series I/O Module is installed), See page 10: P50 [Anlg In0 Value]
Port 0: P592 [Selected Spd Ref]

Table 28 - 0…+10V Analog Input - Unipolar Speed Reference at Terminals Ai0±



22-Series I/O Module TB1



Jumpers set to voltage mode.

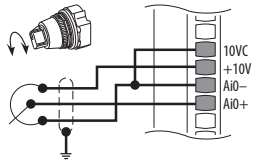
Set Direction Mode
Port 0: P308 [Direction Mode] = 0 "Unipolar"

Set Selection
Port 0: P545 [Spd Ref A Sel] = Port 4 (or port where your 22-Series I/O Module is installed), See page 10: P50 [Anlg In0 Value]

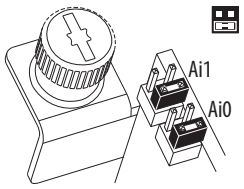
Adjust Scaling
Port 4 (or port where your 22-Series I/O Module is installed), See page 10: P51 [Anlg In0 Hi] = 10 Volt
Port 4 (or port where your 22-Series I/O Module is installed), See page 10: P52 [Anlg In0 Lo] = 0 Volt
Port 0: P547 [Spd Ref A AnlgHi] = 60 Hz
Port 0: P548 [Spd Ref A AnlgLo] = 0 Hz

View Results
Port 4 (or port where your 22-Series I/O Module is installed), See page 10: P50 [Anlg In0 Value]
Port 0: P592 [Selected Spd Ref]

Table 29 - 10k Ohm Potentiometer - Unipolar Speed Reference at Terminals Ai0±



22-Series I/O Module TB1



Jumpers set to voltage mode.

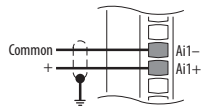
Set Direction Mode
Port 0: P308 [Direction Mode] = 0 "Unipolar"

Set Selection
Port 0: P545 [Spd Ref A Sel] = Port 4 (or port where your 22-Series I/O Module is installed), See page 10: P50 [Anlg In0 Value]

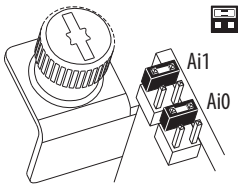
Adjust Scaling
Port 4 (or port where your 22-Series I/O Module is installed), See page 10: P51 [Anlg In0 Hi] = 10 Volt
Port 4 (or port where your 22-Series I/O Module is installed), See page 10: P52 [Anlg In0 Lo] = 0 Volt
Port 0: P547 [Spd Ref A AnlgHi] = 60 Hz
Port 0: P548 [Spd Ref A AnlgLo] = 0 Hz

View Results
Port 4 (or port where your 22-Series I/O Module is installed), See page 10: P50 [Anlg In0 Value]
Port 0: P592 [Selected Spd Ref]

Table 30 - 0…20 mA Analog Input - Unipolar Speed Reference at Terminals Ai1±



22-Series I/O Module TB1



Jumpers set to current mode.

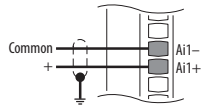
Set Direction Mode
Port 0: P308 [Direction Mode] = 0 "Unipolar"

Set Selection
Port 0: P545 [Spd Ref A Sel] = Port 4 (or port where your 22-Series I/O Module is installed), See page 10: P60 [Anlg In1 Value]

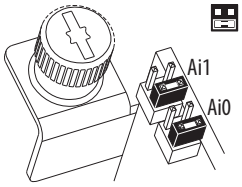
Adjust Scaling
Port 4 (or port where your 22-Series I/O Module is installed), See page 10: P61 [Anlg In1 Hi] = 20 mA
Port 4 (or port where your 22-Series I/O Module is installed), See page 10: P62 [Anlg In1 Lo] = 0 mA
Port 0: P547 [Spd Ref A AnlgHi] = 60 Hz
Port 0: P548 [Spd Ref A AnlgLo] = 0 Hz

View Results
Port 4 (or port where your 22-Series I/O Module is installed), See page 10: P60 [Anlg In1 Value]
Port 0: P592 [Selected Spd Ref]

Table 31 - 0…+10V Analog Input - Unipolar Speed Reference at Terminals Ai1±



22-Series I/O Module TB1



Jumpers set to voltage mode.

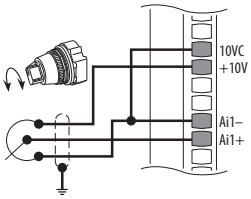
Set Direction Mode
Port 0: P308 [Direction Mode] = 0 "Unipolar"

Set Selection
Port 0: P545 [Spd Ref A Sel] = Port 4, (or port where your 22-Series I/O Module is installed)See page 10: P60 [Anlg In1 Value]

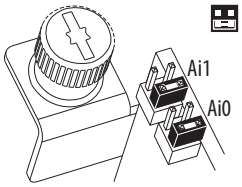
Adjust Scaling
Port 4 (or port where your 22-Series I/O Module is installed), See page 10: P61 [Anlg In1 Hi] = 10 Volt
Port 4 (or port where your 22-Series I/O Module is installed), See page 10: P62 [Anlg In1 Lo] = 0 Volt
Port 0: P547 [Spd Ref A AnlgHi] = 60 Hz
Port 0: P548 [Spd Ref A AnlgLo] = 0 Hz

View Results
Port 4 (or port where your 22-Series I/O Module is installed), See page 10: P60 [Anlg In1 Value]
Port 0: P592 [Selected Spd Ref]

Table 32 - 10k Ohm Potentiometer - Unipolar Speed Reference at Terminals Ai1±



22-Series I/O Module TB1



Jumpers set to voltage mode.

Set Direction Mode
Port 0: P308 [Direction Mode] = 0 "Unipolar"

Set Selection
Port 0: P545 [Spd Ref A Sel] = Port 4 (or port where your 22-Series I/O Module is installed), See page 10: P60 [Anlg In1 Value]

Adjust Scaling
Port 4 (or port where your 22-Series I/O Module is installed), See page 10: P61 [Anlg In1 Hi] = 10 Volt
Port 4 (or port where your 22-Series I/O Module is installed), See page 10: P62 [Anlg In1 Lo] = 0 Volt
Port 0: P547 [Spd Ref A AnlgHi] = 60 Hz
Port 0: P548 [Spd Ref A AnlgLo] = 0 Hz

View Results
Port 4 (or port where your 22-Series I/O Module is installed), See page 10: P60 [Anlg In1 Value]
Port 0: P592 [Selected Spd Ref]

Table 33 - 2-Wire Control on 22-Series I/O Module

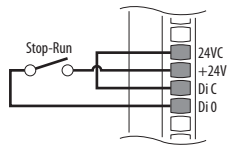
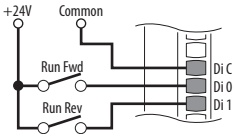
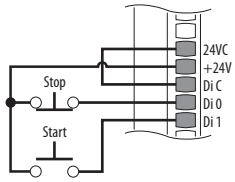
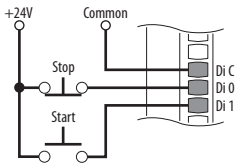
Non-Reversing - Internal Supply  22-Series I/O Module TB1	**Set Direction Mode** Port 0: P308 [Direction Mode] = 2 "Rev Disable" **Set Selection** Port 0: P163 [DI Run] = Port 4 (or port where your 22-Series I/O Module is installed), See page 10: P1 [Dig In Sts], bit 0 = Input 0 **View Results** Port 4 (or port where your 22-Series I/O Module is installed), See page 10: P1 [Dig In Sts] Port 0: P935 [Drive Status 1]
Reversing - External Supply  22-Series I/O Module TB1	**Set Direction Mode** Port 0: P308 [Direction Mode] = 0 "Unipolar" **Set Selection** Port 0: P164 [DI Run Forward] = Port 4 (or port where your 22-Series I/O Module is installed), See page 10: P1 [Dig In Sts], bit 0 = Input 0 Port 0: P165 [DI Run Reverse] = Port 4 (or port where your 22-Series I/O Module is installed), See page 10: P1 [Dig In Sts], bit 1 = Input 1 **View Results** Port 4 (or port where your 22-Series I/O Module is installed), See page 10: P1 [Dig In Sts] Port 0: P935 [Drive Status 1] **IMPORTANT:** Connect 24V supply only to 20-750-2262C-2R or 20-750-2263C-1R2T.

Table 34 - 3-Wire Control on 22-Series I/O Module

Internal Supply  22-Series I/O Module TB1	**Set Selection** Port 0: P158 [DI Stop] = Port 4 (or port where your 22-Series I/O Module is installed), See page 10: P1 [Dig In Sts], bit 0 = Input 0 Port 0: P161 [DI Start] = Port 4 (or port where your 22-Series I/O Module is installed), See page 10: P1 [Dig In Sts], bit 1 = Input 1 **View Results** Port 4 (or port where your 22-Series I/O Module is installed), See page 10: P1 [Dig In Sts] Port 0: P935 [Drive Status 1]
External Supply  22-Series I/O Module TB1	**Set Selection** Port 0: P158 [DI Stop] = Port 4 (or port where your 22-Series I/O Module is installed), See page 10: P1 [Dig In Sts], bit 0 = Input 0 Port 0: P161 [DI Start] = Port 4 (or port where your 22-Series I/O Module is installed), See page 10: P1 [Dig In Sts], bit 1 = Input 1 **View Results** Port 4 (or port where your 22-Series I/O Module is installed), See page 10: P1 [Dig In Sts] Port 0: P935 [Drive Status 1] **IMPORTANT:** Connect 24V supply only to 20-750-2262C-2R or 20-750-2263C-1R2T. Connect 120V supply only to 20-750-2262D-2R.

EtherNet/IP Communication

IMPORTANT This section assumes that an EtherNet/IP network has been set up to connect to the drive.

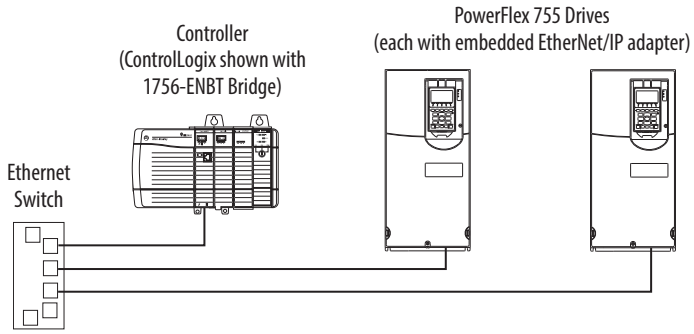
Communication over PF755 Embedded Ethernet/IP (Port 13)

You will need the information gathered in Step 2: Validate the Drive Installation, Where are Signal Sources Connected? on page 10 to complete the EtherNet/IP setup.

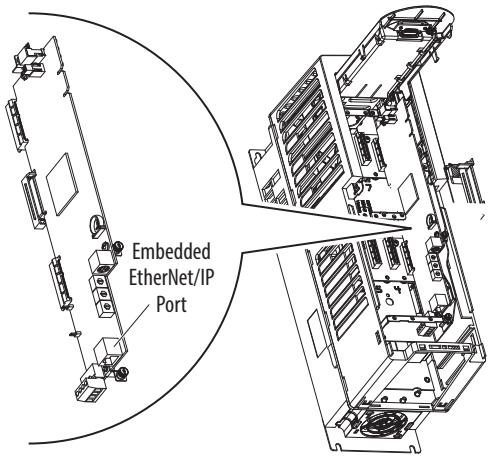
Connecting the Ethernet Cable to the Drive

ATTENTION: Risk of injury or death exists. The drive may contain high voltages that can cause injury or death. Remove power from the drive. Verify power has been discharged before connecting the embedded EtherNet/IP adapter to the network.

1. Remove power from the drive.
2. Remove the drive cover and lift up the drive HIM bezel to its open position to access the drive control pod.
3. Use static control precautions.
4. Connect one end of an Ethernet cable to the network. See the following figure for an example of wiring to an EtherNet/IP network.



5. Route the other end of the Ethernet cable through the bottom of the PowerFlex 755 drive, and insert the cable plug into the embedded EtherNet/IP adapter mating socket.



Setting the IP Address

There are three ways to set the IP address on a PowerFlex 755 embedded EtherNet adapter.

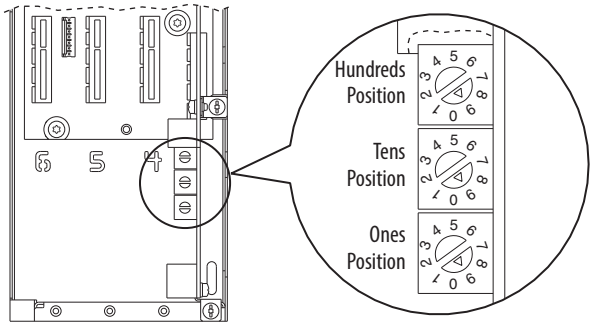
- BOOTP server
- Manually via the rotary switches
- Manually via adapter parameters

TIP If the PowerFlex 755 drive is connected to a Stratix 6000 or Stratix 8000 managed Ethernet switch and the drive is set for BOOTP mode, the 'dynamic IP address assignment by port' (Stratix 6000) or 'DHCP persistence' (Stratix 8000) feature will automatically set the IP address for the drive. For more details, see the Stratix 6000 Ethernet Managed Switch User Manual, publication 1783-UM001 or the Stratix 8000 and Stratix 8300 Ethernet Managed Switches User Manual, publication 1783-UM003.

Setting the IP Address Using BOOTP Server

By default, the drive is set up to receive its IP address via the BOOTP server.

1. Verify the rotary switches are set to the value of 999 or any value other than 001...254 and 888.



2. Verify parameter 36 [BOOTP] on Port 13 is set to '1' (Enabled).
3. Verify communication has been established (ENET status indicator is steady green).
   If the status indicator is not steady green, refer to the PowerFlex 755 Drive Embedded EtherNet/IP Adapter User Manual, publication 750COM-UM001 and/or your network administrator to validate connectivity.

Setting the IP Address Using the Adapter Rotary Switches

You can use the rotary switches to set the IP address if the following are met.

- The IP address follows the format 192.168.1.xxx
- The subnet mask is 255.255.255.0
- There is no gateway address

IMPORTANT When using the adapter rotary switches, set the IP address before power is applied because the adapter uses the IP address it detects when it first receives power.

1. Verify that the drive is not powered.
2. Set the IP address to a valid address (001...254) by turning the rotary switches using a small screwdriver.
   For example, if the IP address needs to be 192.168.1.123, turn the top switch so the arrow is pointing at 1, turn the middle switch so the arrow is pointing at 2, and turn the bottom switch so the arrow is pointing at 3.
   See Table 35 for more information on the address settings.

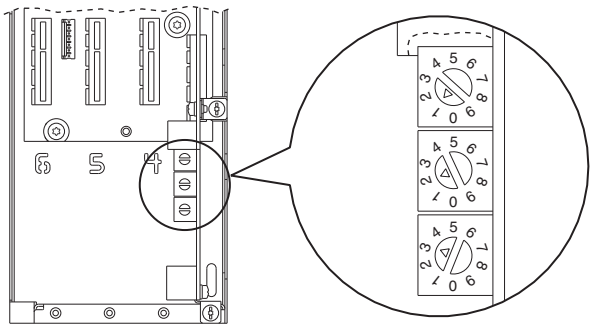


Table 35 - IP Address Settings and Descriptions

Settings	Description
001…254	The adapter will use the rotary switch settings for the IP address (192.168.1.xxx, where xxx = rotary switch settings). The value stored in **parameter 36 - [BOOTP]** is automatically ignored.
888	Resets the adapter IP address function to factory defaults. Thereafter, the drive must be powered down, the switches set to a correct value (001…254), and then the drive must be powered up again to accept the new address.
Any other setting	Disables the rotary switches and requires using **parameter 36 - [BOOTP]** to select the BOOTP server as the source for the IP address or, if disabled, selects the adapter parameters as the source.

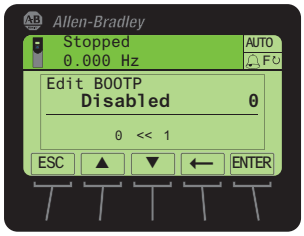
3. Apply power to the drive.
4. Verify communication has been established.
   If communication is not established, refer to the PowerFlex 755 Drive Embedded EtherNet/IP Adapter User Manual, publication 750COM-UM001 and/or your network administrator to validate connectivity.

Setting the IP Address Using Adapter Parameters

1. Verify that the IP address rotary switches are set to any value other than 001...254 or 888. The default setting is 999. See Table 35 on page 54 for more information on the address settings.

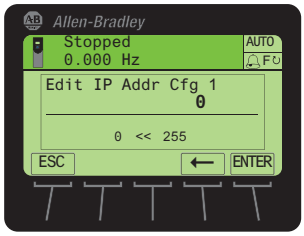
ATTENTION: Risk of equipment damage, injury, or death exists. Unpredictable operation may occur if you fail to verify that parameter settings are compatible with your application. Verify that settings are compatible with your application before applying power to the drive.

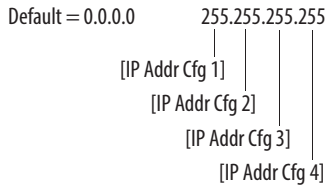
2. Apply power to the drive.
3. Set the value of parameter 36 [BOOTP] to '0' (Disabled).



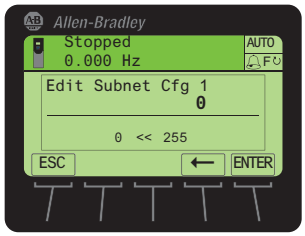
Value	Setting
0	Disabled
1	Enabled (Default)

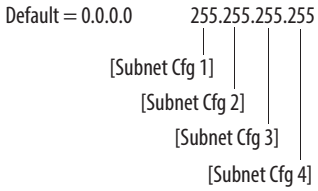
4. Set the value of parameters 38 [IP Addr Cfg 1] through 41 [IP Addr Cfg 4] to a unique IP address.



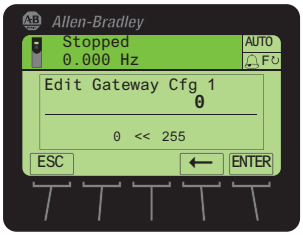


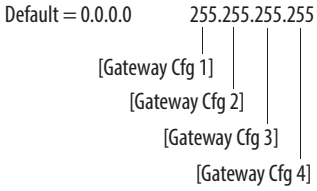
5. Set the value of parameters 42 [Subnet Cfg 1] through 45 [Subnet Cfg 4] to the desired value for the subnet mask.





6. If required, set the value of parameters 46 [Gateway Cfg 1] through 49 [Gateway Cfg 4] to the desired value for the gateway device.





7. Reset the adapter by power cycling the drive or by using the HIM's Reset Device function located in the drive's DIAGNOSTIC folder.

Table 36 - PowerFlex 755 Embedded EtherNet/IP Port 13 Parameter Settings

No.	Drive Parameter Name	User Setting	Default	Value/Options	Notes
33	Port Number	13	0		
36	BOOTP	0	1	0 = Disabled 1 = Enabled	A reset of the adapter is required. Reset the adapter by power cycling the drive or by using the HIM's Reset Device function located in the drive's DIAGNOSTIC folder.
38	IP Addr Cfg 1	192			Example IP Address.
39	IP Addr Cfg 2	168	0		
40	IP Addr Cfg 3	1			
41	IP Addr Cfg 4	xxx			Set to desired value.
42	Subnet Cfg 1	255			
43	Subnet Cfg 2	255			
44	Subnet Cfg 3	255			
42	Subnet Cfg 4	0			
Leave the remainder of the Embedded EtherNet/IP (Port 13) parameters at their default settings.					

Set the Start, Stop, and Speed Reference Commands via the EtherNet/IP Adapter

By default, the Start and Stop commands are enabled over the EtherNet/IP adapter. To set the speed reference via the EtherNet/IP adapter, set parameter 545 [Spd Ref A Sel]. See Table 37.

Table 37 - Speed Reference Parameter Setting

No.	Drive Parameter Name	User Setting	Default	Value/Options	Notes
545	Spd Ref A Sel	877	871	P871 = Port 1 HIM reference P877 = Port 13 reference	Selects the source parameter number for the speed reference while in "Auto" (typical) mode. Reference value from port devices. For a speed reference from a communication network, set this parameter to Port 0 and select P871…877 [Port_*n*_Reference] as appropriate. **Important Example**: 20-COMM-E, EtherNet/IP Communication Adapter = Dint for speed reference multiplied by 1,000 (60 Hz = 60,000 and 1750 RPM = 1,750,000).

Communication over EtherNet/IP on 20-750-ENETR Module

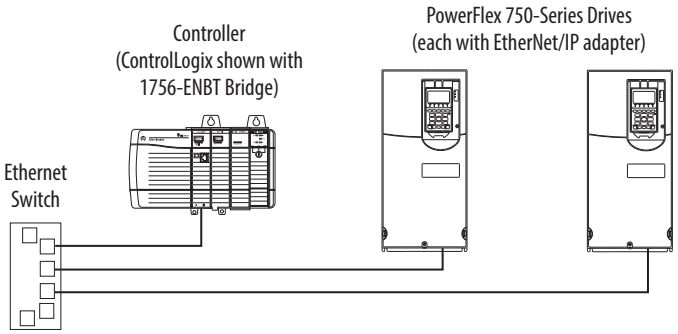
You will need the information gathered in Step 2: Validate the Drive Installation, Where are Signal Sources Connected? on page 10 to complete the EtherNet/IP setup.

Connecting the Ethernet Cable to the Drive

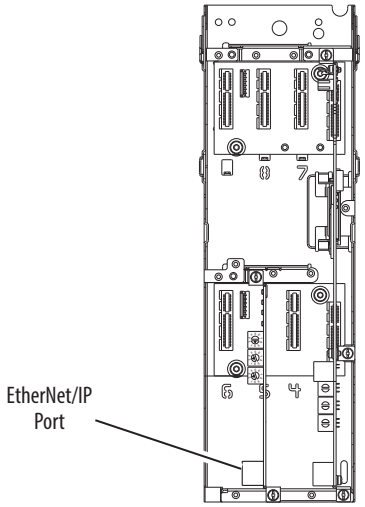
IMPORTANT This section addresses the setup on the PowerFlex 20-750-ENETR Dual-port EtherNet/IP Option module that is installed in Port 6 of the drive.

ATTENTION: Risk of injury or death exists. The drive may contain high voltages that can cause injury or death. Remove power from the drive. Verify power has been discharged before connecting the embedded EtherNet/IP adapter to the network.

1. Remove power from the drive.
2. Remove the drive cover and lift up the drive HIM bezel to its open position to access the drive control pod.
3. Use static control precautions.
4. Connect one end of an Ethernet cable to the network. See the following figure for an example of wiring to an EtherNet/IP network.



5. Route the other end of the Ethernet cable through the bottom of the PowerFlex 750-Series drive, and insert the cable plug into the EtherNet/IP adapter mating socket.



Setting the IP Address

There are three ways to set the IP address on a PowerFlex 20-750-ENETR Dual-port EtherNet/IP option module.

- DHCP or BOOTP server
- Manually via the rotary switches
- Manually via adapter parameters

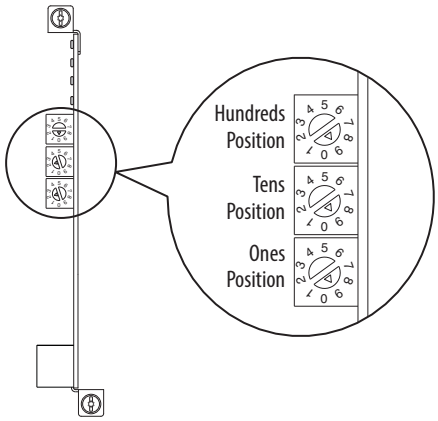
TIP If the PowerFlex 750-Series drive is connected to a Stratix 6000 or Stratix 8000 managed Ethernet switch and the drive is set for BOOTP mode, the 'dynamic IP address assignment by port' (Stratix 6000) or 'DHCP persistence' (Stratix 8000) feature will set the IP address for the drive. For more details, see the Stratix 6000 Ethernet Managed Switch User Manual, publication 1783-UM001 or the Stratix 8000 and Stratix 8300 Ethernet Managed Switches User Manual, publication 1783-UM003.

Setting the IP Address Using DHCP or BOOTP Server

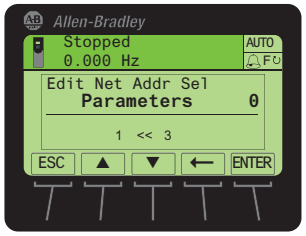
IMPORTANT When the DHCP lease expires, the option module stops communicating on the network, which requires a power cycle or option module reset.

By default, the drive is set up to receive its IP address via the BOOTP server.

1. Verify the rotary switches are set to the value of 999 or any value other than 001...254 and 888.



2. Verify parameter 5 [Net Addr Sel] on Port 6 is set to either '2' (BOOTP) or '3' (DHCP).



Value	Setting
1	Parameters
2	BOOTP
3	DHCP (Default)

3. Verify communication has been established (ENET status indicator is steady green).
If the status indicator is not steady green, refer to the PowerFlex 20-750-ENETR Dual-port EtherNet/IP Option Module User Manual, publication 750COM-UM008 and/or your network administrator to validate connectivity.

Setting the IP Address Using the Adapter Rotary Switches

You can use the rotary switches to set the IP address if the following are met.

- The IP address follows the format 192.168.1.xxx
- The subnet mask is 255.255.255.0
- There is no gateway address

IMPORTANT When using the adapter rotary switches, set the IP address before power is applied because the adapter uses the IP address it detects when it first receives power.

1. Verify that the drive is not powered.
2. Set the IP address to a valid address (001...254) by turning the rotary switches using a small screwdriver.
   For example, if the IP address needs to be 192.168.1.123, turn the top switch so the arrow is pointing at 1, turn the middle switch so the arrow is pointing at 2, and turn the bottom switch so the arrow is pointing at 3.
   See Table 38 for more information on the address settings.

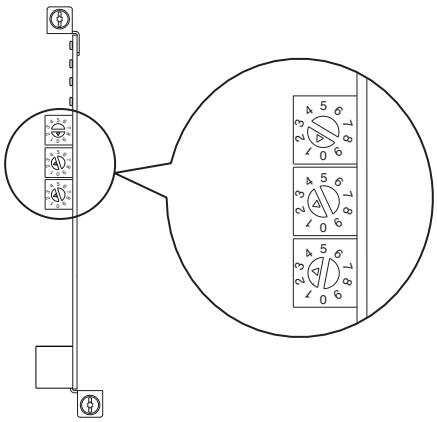


Table 38 - IP Address Settings and Descriptions

Settings	Description
001…254	The adapter will use the rotary switch settings for the IP address (192.168.1.xxx, where xxx = rotary switch settings). The value stored in **parameter 36 - [BOOTP]** is automatically ignored.
888	Resets the adapter IP address function to factory defaults. Thereafter, the drive must be powered down, the switches set to a correct value (001…254), and then the drive must be powered up again to accept the new address.
Any other setting	Disables the rotary switches and requires using **parameter 36 - [BOOTP]** to select the BOOTP server as the source for the IP address or, if disabled, selects the adapter parameters as the source.

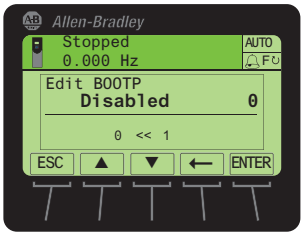
3. Apply power to the drive.
4. Verify communication has been established.
   If communication is not established, refer to the PowerFlex 20-750-ENETR Dual-port EtherNet/IP Option Module User Manual, publication 750COM-UM008 and/or your network administrator to validate connectivity.

Setting the IP Address Using Adapter Parameters

1. Verify that the IP address rotary switches are set to any value other than 001...254 or 888. The default setting is 999. See Table 38 on page 59 for more information on the address settings.

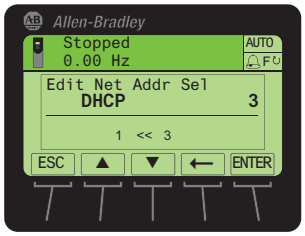
ATTENTION: Risk of equipment damage, injury, or death exists. Unpredictable operation may occur if you fail to verify that parameter settings are compatible with your application. Verify that settings are compatible with your application before applying power to the drive.

2. Apply power to the drive.
3. Set the value of parameter 36 [BOOTP] to '0' (Disabled).



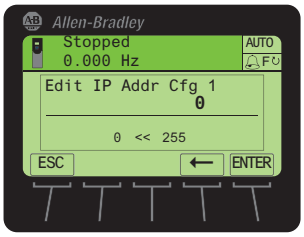
Value	Setting
0	Disabled
1	Enabled (Default)

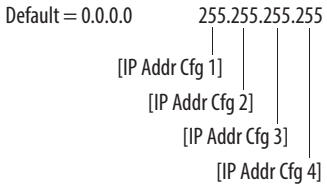
4. Set the value of parameter 5 [Net Addr Sel] to '1' (Parameters).



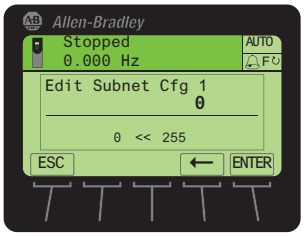
Value	Setting
1	Parameters
2	BOOTP
3	DHCP (default)

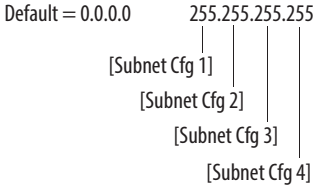
5. Set the value of parameters 7 [IP Addr Cfg 1] through 10 [IP Addr Cfg 4] to a unique IP address.



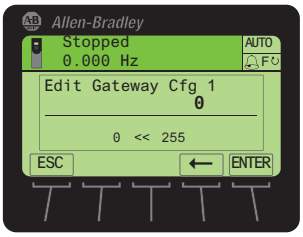


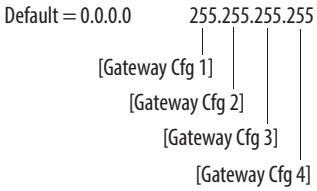
6. If required, set the value of parameters 11 [Subnet Cfg 1] through 14 [Subnet Cfg 4] to the desired value for the subnet mask.





7. If required, set the value of parameters 15 [Gateway Cfg 1] through 18 [Gateway Cfg 4] to the desired value for the gateway device.





8. Reset the option module. See Reset the Option Module on page 62.

Table 39 - PowerFlex 750-Series 20-750-ENETR Option Module Parameter Settings

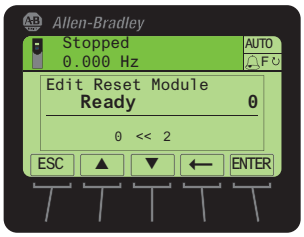
No.	Drive Parameter Name	User Setting	Default	Value/Options	Notes
2	Port Number	5	0	4, 5, or 6	Port Number
5	Net Addr Sel	13	3	1 = Parameters 2 = BOOTP 3 = DHCP	
7	IP Addr Cfg 1	192			Example IP Address.
8	IP Addr Cfg 2	168	0		
9	IP Addr Cfg 3	1			
10	IP Addr Cfg 4	xxx			Set to desired value.
11	Subnet Cfg 1	255			
12	Subnet Cfg 2	255			
13	Subnet Cfg 3	255			
14	Subnet Cfg 4	0			
Leave the remainder of the Embedded EtherNet/IP (Port 13) parameters at their default settings.					

Reset the Option Module

Changes to switch and jumper settings and some option module parameters require you to reset the option module before the new settings take effect. You can reset the option module by power cycling the drive or by using parameter 25 [Reset Module].

ATTENTION: Risk of injury or equipment damage exists. If the option module is transmitting control I/O to the drive, the drive can fault when you reset the option module. Determine how your drive responds before resetting the option module.

1. Set Device parameter 25 [Reset Module] (located on the communication card) to "1" (Reset Module).



Value	Description
0	Ready (Default)
1	Reset Module
2	Set Defaults

When you enter "1" (Reset Module), the option module immediately resets. An alternate method to reset the module is by power cycling the drive.

Set the Start, Stop, and Speed Reference Commands via the EtherNet/IP Adapter

By default, the Start and Stop commands are enabled over the PowerFlex 20-750-ENETR Dual-Port EtherNet/IP option module. To set the speed reference via the EtherNet/IP option module, set parameter 545 [Spd Ref A Sel]. See Table 40.

Table 40 - Speed Reference Parameter Setting

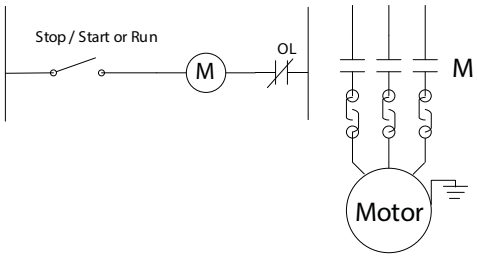
No.	Drive Parameter Name	User Setting	Default	Value/Options	Notes
545	Spd Ref A Sel	876	871	P871 = Port 1 HIM reference P876 = Port 6 reference	Selects the source parameter number for the speed reference while in "Auto" (typical) mode. Reference value from port devices. For a speed reference from a communication network, set this parameter to Port 0 and select P871…876 [Port_*n*_Reference] as appropriate. **Important Example**: 20-COMM-E, EtherNet/IP Communication Adapter = Dint for speed reference multiplied by 1,000 (60 Hz = 60,000 and 1750 RPM = 1,750,000).

2-Wire and 3-Wire Control

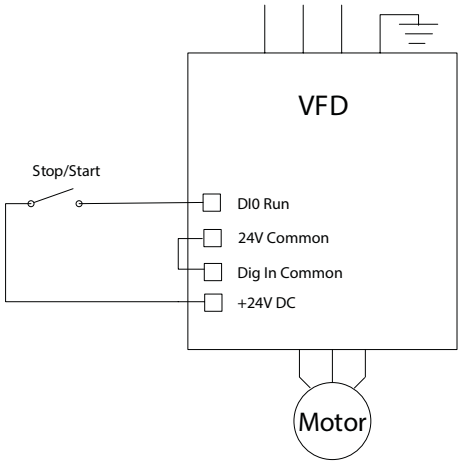
The two types of ladder control circuits commonly used are the 2-wire control circuit and the 3-wire control circuit.

The 2-wire control circuit uses “maintained” contact devices to control the drive/motor. A typical 2-wire control circuit is shown in the following figure.

2-Wire Control on a Motor Starter



2-Wire Control on a Drive

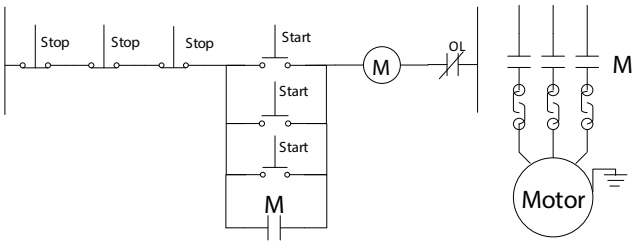


A 2-wire control circuit consists of a normally open “maintained” contact device that, when closed, energizes the coil of a magnetic motor starter. This in turn energizes the connected motor load, or in the case of VFD, initiates a Run command to energize the motor load. The 2-wire control circuit provides what is known as “low-voltage release.” In the event of a power failure, the magnetic motor starter or VFD shuts down. When power is restored, the magnetic motor starter or VFD automatically reenergizes, provided that none of the maintained contact devices have changed state.

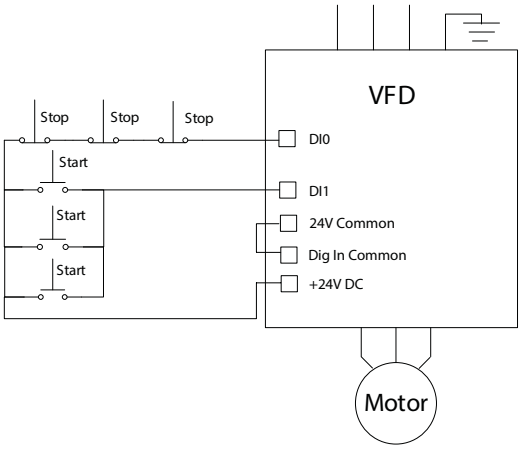
This can be quite advantageous in applications such as refrigeration, air conditioning, or remote pump stations where you do not need someone to restart the equipment after a power failure. It can, however, be extremely dangerous in applications where equipment automatically starts, placing the operator in danger.

The 3-wire control circuit uses “momentary” contact devices to control the driver/motor starter. A typical 3-wire control circuit is shown in the following figure.

3-Wire Control on a Motor Starter



3-Wire Control on a Drive



A 3-wire control circuit consists of a normally closed stop button (STOP), a normally open start button (START), and sealing contact (M), and the coil of a magnetic motor starter. When the normally open start button is pressed, the coil of the magnetic motor starter is energized. An auxiliary contact seals around the start button to provide a latched circuit. In the case of a VFD, the internal logic control of the VFD functions identical in principle to the sealing contact.

Pressing the normally closed stop button disrupts the circuit. The 3-wire control circuit provides what is known as "low-voltage protection." In the event of a power failure, the magnetic motor starter drops out. In this case, however, when power is restored the magnetic motor starter does not automatically reenergize. The operator must press the start button to initiate the sequence of operations.

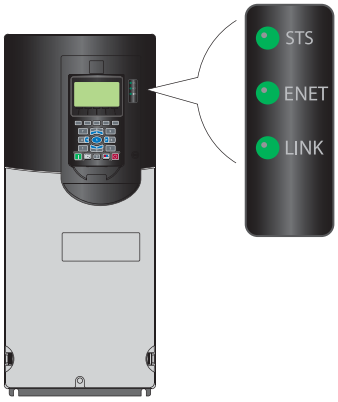
The 3-wire control circuit figure illustrates a control circuit with multiple start and stop push buttons. In this circuit, multiple normally closed stop buttons are placed in series and multiple open start buttons are placed in parallel to operate a magnetic motor starter in VFD. This is a common application of a 3-wire control circuit in which you need to start and stop the same VFD/motor from multiple locations within a facility. The 3-wire control circuit can be used in a variety of ways to meet specific circuit application.

Drive Status Indicators

Table 41 - PowerFlex 753 Status Indicator Descriptions

Name	Color	State	Description
STS (Status)	Green	Flashing	Drive ready but not running, and no faults are present.
		Steady	Drive running, no faults are present.
	Yellow	Flashing	Drive is not running, a start inhibit condition exists and the drive cannot be started. See parameter 933 [Start Inhibits].
		Steady	A type 1 (user configurable) alarm exists. If the drive is stopped, it is prevented from starting until the alarm condition is cleared. If the drive is running, it continues to run but cannot restart until the alarm condition is cleared. See parameters 959 [Alarm Status A] and 960 [Alarm Status B].
	Red	Flashing	A major fault has occurred. Drive stops. Drive cannot be started until fault condition is cleared. See parameter 951 [Last Fault Code].
		Steady	A non-resettable fault has occurred.
	Red / Yellow	Flashing Alternately	A minor fault has occurred. When running, the drive continues to run. System is brought to a stop under system control. Fault must be cleared to continue. Use parameter 950 [Minor Flt Cfg] to enable. If not enabled, acts like a major fault.
	Yellow / Green	Flashing Alternately	When running, a type 1 alarm exists. See parameters 959 [Alarm Status A] and 960 [Alarm Status B].
	Green / Red	Flashing Alternately	Drive is flash updating.

Table 42 - PowerFlex 755 Status Indicator Descriptions

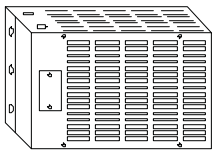


Name	Color	State	Description
STS (Status)	Green	Flashing	Drive ready but not running, and no faults are present.
		Steady	Drive running, no faults are present.
	Yellow	Flashing	Drive is not running, a type 2 (non-configurable) alarm condition exists and the drive cannot be started. See parameter 961 [Type 2 Alarms].
		Steady	A type 1 (user configurable) alarm exists. If the drive is stopped, it is prevented from starting until the alarm condition is cleared. If the drive is running, it continues to run but cannot restart until the alarm condition is cleared. See parameters 959 [Alarm Status A] and 960 [Alarm Status B].
	Red	Flashing	A major fault has occurred. Drive stops. Drive cannot be started until fault condition is cleared. See parameter 951 [Last Fault Code].
		Steady	A non-resettable fault has occurred.
	Red / Yellow	Flashing Alternately	A minor fault has occurred. When running, the drive continues to run. System is brought to a stop under system control. Fault must be cleared to continue. Use parameter 950 [Minor Flt Cfg] to enable. If not enabled, acts like a major fault.
	Yellow / Green	Flashing Alternately	When running, a type 1 alarm exists. See parameters 959 [Alarm Status A] and 960 [Alarm Status B].
	Green / Red	Flashing Alternately	Drive is flash updating.
ENET	Unlit	Off	Embedded EtherNet/IP is not properly connected to the network or needs an IP address.
	Red	Flashing	An EtherNet/IP connection has timed out.
		Steady	Adapter failed the duplicate IP address detection test.
	Red / Green	Flashing Alternately	Adapter is performing a self-test.
	Green	Flashing	Adapter is properly connected but is not communicating with any devices on the network.
		Steady	Adapter is properly connected and communicating on the network.
LINK	Unlit	Off	Adapter is not powered or is not transmitting on the network.
	Green	Flashing	Adapter is properly connected and transmitting data packets on the network.
		Steady	Adapter is properly connected but is not transmitting on the network.

Dynamic Brake Resistor

Determine whether your drive and motor utilize a dynamic brake resistor.
Dynamic brake resistors generate heat so they are usually outside of the panel in a protective cage.

Record if a dynamic brake resistor is connected for each of your drive/motor combinations.



Typical resistor cage

Drive/Motor 1	Drive/Motor 2	Drive/Motor 3	Drive/Motor 4	Drive/Motor 5
❑ Yes ❑ No	❑ Yes ❑ No	❑ Yes ❑ No	❑ Yes ❑ No	❑ Yes ❑ No

How Dynamic Braking Works

Many fan, pump, and conveyor-like applications are allowed to coast to stop. If a controlled ramp to stop is required, the regenerative energy needs to be converted or dissipated and dynamic braking may be necessary. Adding a dynamic brake can help prevent over voltage to the drive VFD bus, fault conditions, or damage to the drive.

For purposes of this publication, a solution that allows the drive to feed the regenerated electrical power to a resistor, which then transforms it into thermal energy, is provided to prevent bus over voltage or potential damage. This process is referred to as dynamic braking (DB).

Internal dynamic braking chopper circuitry, including DB resistor power terminals BR1 and BR2, are standard on PowerFlex 750-series drives frames 1...5 and are optional on frames 6 and 7. DB resistor connections BR1 and BR2 are not available on frames 8...10, however dynamic braking can be achieved via an independent chopper module that is connected to the DC+ and DC- terminals by using an appropriate-sized DB resistor connected to it. In the latter case, the properly-sized external chopper module senses and regulates the DC bus voltage level independent of the drive control.

For more information on how to size a dynamic brake chopper and/or resistor, see PowerFlex Dynamic Braking Resistor Calculator Application Technique, publication PFLEX-AT001.

For frames 1...7, see Table 43 to configure these parameters so the dynamic brake properly functions.

Table 43 - Dynamic Brake Resistor Parameter Settings

No.	Parameter Name	External Resistor User Setting	Internal Resistor User Setting	Values		Notes
370	Stop Mode A	1	1	Default: Options:	1 = "Ramp" 0 = "Coast" 1 = "Ramp"	Fans, pumps, and compressors are typically allowed to coast to stop - dynamic braking is not required. Ramp to stop mode may cause regenerative energy - dynamic braking can be required. The shorter the decel time, P537 [Decel Time], the greater potential need for dynamic braking.
372	Bus Reg Mode A	2	2	Default: Options:	1 = "Adjust Freq" 1 = "Adjust Freq" 2 = "Dyn Brake" 3 = "Both DB 1st"	Not considered when P370 [Stop Mode A] = 0 "Coast". If dynamic brake resistor is installed, this parameter must be set to either 2 "Dyn Brake" or 3 "Both DB 1st".
382	DB Resistor Type	1	0	Default: Options:	0 = "Internal" 0 = "Internal" 1 = "External"	Not considered when P370 [Stop Mode A] = 0 "Coast".
383	DB Ext Ohms	Resistor NP	N/A	Units: Default: Min/Max:	Ohms Based on Drive Rating Minimum Resistor Rating	Observe minimum resistance rating by drive size.
384	DB Ext Watts	Resistor NP	N/A	Units: Default: Min/Max:	Watt 100 1.00 to 500000.00	Sets the continuous rated power reference for the eternal dynamic brake resistor.
385	DB ExtPulse Watts	Resistor NP(1)	N/A	Units: Default: Min/Max:	Watt Sec 2000 1.00 to 100000000.00	Refer to the PowerFlex Dynamic Braking Resistor Calculator Application Technique, publication PFLEX-AT001, for external resistor pulse watts settings. Or consult the resistor manufacturer for this specification.

(1) If this information is not available for the dynamic brake resistor, increase the value until nuisance DynBrake OvrTemp Alarm 10 ceases.

Acceleration and Deceleration Time

Acceleration Time

Longer acceleration times can be an application consideration due to high inertia of the load and motor rotating mass. A typical application example that requires this consideration is a centrifugal fan load. Issues that can occur include overload conditions of the motor and/or drive or over current conditions of the drive. Results of these issues can be the drive exhibiting a fault condition in either motor or drive overload fault (F7 and F64 respectively) or can cause a hardware over current fault (F12). If these faults are present and in order to prevent these faults as part of startup, acceleration time must be set to the capabilities of the drive based on the load and application requirements. The normal solution will be to set parameter 535 [Accel Time 1] to longer time period so that an overload or over current condition of the drive does not occur.

An approach to perform this configuration is to set acceleration times to incremental 30 second acceleration times above the last setting and restart the drive until the load is able to start without a fault condition. The maximum acceleration time for most applications is up to 5 minutes, however very high inertia loads could require higher acceleration times (for example, 30 minutes may be common for a centrifuge). If faster acceleration time is required for the load, contact your Allen-Bradley distributor or Allen-Bradley technical support for further application review or potential drive sizing considerations.

Recommendation:

If the load has a large inertia value and acceleration time is not an application concern, set the current limit of the drive in amps to the continuous current rating of the drive in amps. The overload current setting is configured in parameter 422 [Current Limit 1]. This lets the drive apply its rated current to the motor on a continuous basis until the application reaches full speed. Default values for this parameter that are time limited equal 110% of the Normal Duty (ND) or 150% of the Heavy Duty (HD) rating of the drive that may have induced a hardware over current fault. To obtain the continuous current rating of the drive, see parameter 21 [Rated Amps].

Deceleration Time

If the drive faults on either an overload or an over voltage condition during deceleration, it is likely due to the deceleration time being too short for the system, which results in the fault condition. Either the drive can be set to coast to rest (parameter 370 [Stop Mode A] is set to “0”) or parameter 537 [Decel Time 1] can be extended to a longer period of time to eliminate the fault condition. Set parameter 537 [Decel Time 1] to the longest necessary decel time allowed by the system. If drive faults or over load conditions continue to exist, dynamic braking can be required. Refer to PowerFlex Dynamic Braking Resistor Calculator, publication PFLEX-AT001, in order to apply a dynamic brake to the application.

Table 44 - Acceleration and Deceleration Parameter Settings

No.	Parameter Name	User Setting	Values		Notes
535	Accel Time 1		Units: Default: Min/Max:	Secs 10 0.00 / 3600.00	Sets the acceleration rate for all speed changes and is dependent on inertia and acceleration torque. Also, set parameter 422 [Current Limit 1] to drive rating. For more information, see Acceleration Time on page 68.
537	Decel Time 1		Units: Default: Min/Max:	Secs 10 0.00 / 3600.00	Sets the deceleration rate for all speed changes and is dependent on inertia and deceleration torque. Decel rate can affect the extent of the dynamic braking needed. Increase the decel rate to reduce regenerative energy demand or increase the dynamic brake capacity. For more information, see Deceleration Time on page 68 or the PowerFlex Dynamic Braking Resistor Calculator Application Technique, publication PFLEX-AT001.
422	Current Limit 1		Units: Default: Min/Max:	Amps Based on drive rating and ND/HD selection Based on drive rating	Current setting above continuous current rating of the drive is time limited. Refer to the Recommendation in Acceleration Time on page 68.

Direction Mode

Table 45 - 753 Main Control Board TB1 2-Wire Control with Reversing Wiring

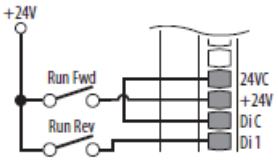
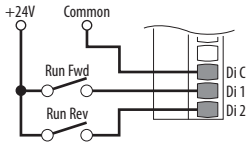
2-Wire Control Reversing Internal 24V Supply	 753 Main Control Board TB1	**Set Direction Mode** Port 0: P308 [Direction Mode] = 0 "Unipolar" **Set Selection** Port 0: P164 [DI Run Forward] = Port 0: P220 [Digital In Sts], bit 1 = Digital In 1 Port 0: P165 [DI Run Reverse] = Port 0: P220 [Digital In Sts], bit 2 = Digital In 2 **View Results** Port 0: P220 [Digital In Sts] Port 0: P935 [Drive Status 1]
2-Wire Control Reversing External 24V Supply	 753 Main Control Board TB1	

Table 46 - 750-Series I/O Module TB1 2-Wire Control with Reversing Wiring

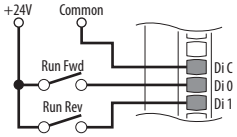
2-Wire Control Reversing External 24V Supply 20-750-2262C-2R 20-750-2263C-1R2T	 750-Series I/O Module TB1	**Set Direction Mode** Port 0: P308 [Direction Mode] = 0 "Unipolar" **Configuration** Port 0: P150 [Digital In Cfg], = 1 "Run Level" **Set Selection** Port 0: P164 [DI Run Forward] = Port 4 (or port where your I/O Module is installed): P1 [Dig In Sts], bit 0 = Input 0 Port 0: P165 [DI Run Reverse] = Port 4 (or port where your I/O Module is installed): P1 [Dig In Sts], bit 1 = Input 1 **View Results** Port 4 (or port where your I/O Module is installed): P1 [Dig In Sts] Port 0: P935 [Drive Status 1]

Table 47 - 753 Main Control Board TB1 & TB3 3-Wire Control with Reversing Wiring

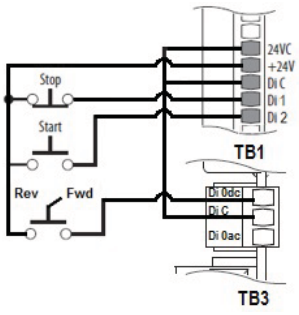
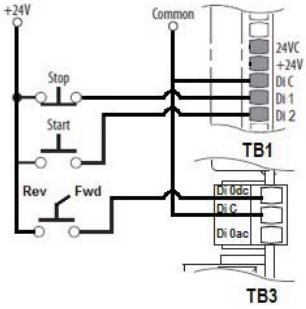
3-Wire Control Reversing Internal Supply	 753 Main Control Board TB1 & TB3	**Set Selection** Port 0: P158 [DI Stop] = Port 0: P220 [Digital In Sts], bit 1 = Digital In 0 Port 0: P161 [DI Start] = Port 0: P220 [Digital In Sts], bit 2 = Digital In 1 Port 0: P162 [DI Fwd Reverse] = Port 0: P220 [Digital In Sts], bit 3 = Digital In 2 **View Results** Port 0: P220 [Digital In Sts] Port 0: P935 [Drive Status 1]
3-Wire Control Reversing External 24V Supply	 753 Main Control Board TB1 & TB3	

Table 48 - 750-11 Series I/O Module TB1 3-Wire Control with Reversing Wiring

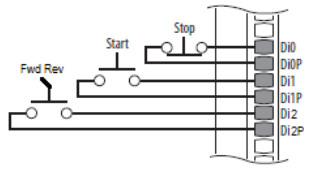
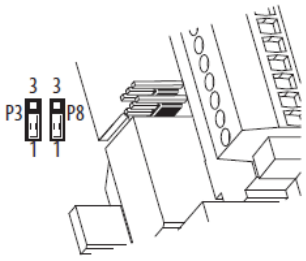
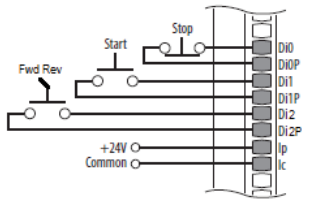
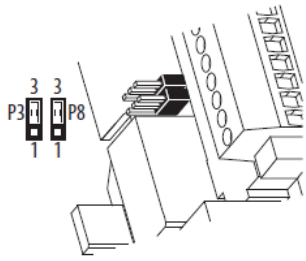
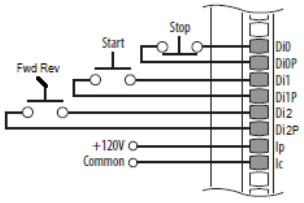
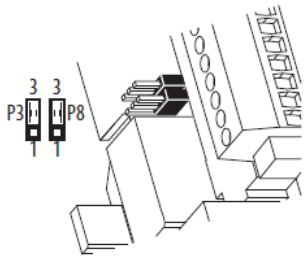
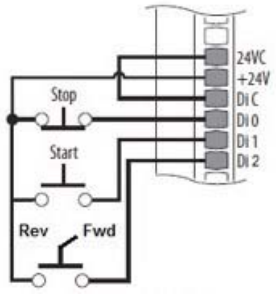
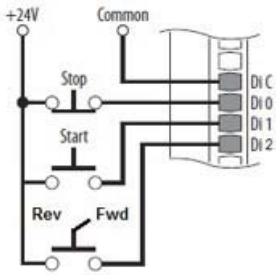
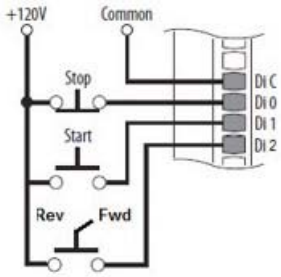
3-Wire Control Reversing Internal Supply	 11-Series I/O Module TB1  750-11 Series I/O Module TB1	**Set Selection** Port 0: P158 [DI Stop] = Port 4 (or port where your I/O Module is installed): P1 [Dig In Sts], bit 0 = Input 0 Port 0: P161 [DI Start] = Port 4 (or port where your I/O Module is installed): P1 [Dig In Sts], bit 1 = Input 1 Port 0: P162 [DI Fwd Reverse] = Port 4 (or port where your I/O Module is installed): P1 [Dig In Sts], bit 2 = Input 2 **View Results** Port 4 (or port where your I/O Module is installed): P1 [Dig In Sts] Port 0: P935 [Drive Status 1]
3-Wire Control Reversing External 24V Supply 20-750-1132C-2R 20-720-1133C-1R2T	 11-Series I/O Module TB1  750-11 Series I/O Module TB1	
3-Wire Control Reversing External 120V Supply 20-750-1132D-2R	 11-Series I/O Module TB1  750-11 Series I/O Module TB1	

Table 49 - 750-22 Series I/O Module TB1 3-Wire Control with Reversing Wiring

3-Wire Control Reversing Internal Supply	 750-22 Series I/O Module TB1	**Set Selection** Port 0: P158 [DI Stop] = Port 4 (or port where your I/O Module is installed): P1 [Dig In Sts], bit 0 = Input 0 Port 0: P161 [DI Start] = Port 4 (or port where your I/O Module is installed): P1 [Dig In Sts], bit 1 = Input 1 Port 0: P162 [DI Fwd Reverse] = Port 4 (or port where your I/O Module is installed): P1 [Dig In Sts], bit 2 = Input 2 **View Results** Port 4 (or port where your I/O Module is installed): P1 [Dig In Sts] Port 0: P935 [Drive Status 1]
3-Wire Control Reversing External 24V Supply 20-750-2262C-2R 20-720-2263C-1R2T	 750-22 Series I/O Module TB1	
3-Wire Control Reversing External 120V Supply 20-750-2262D-2R	 750-22 Series I/O Module TB1	

Analog Output Wiring

Table 50 - 753 Main Control Board TB1 Analog Output Wiring

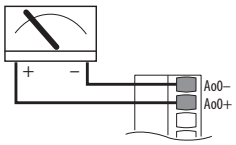
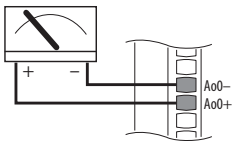
Analog Voltage Output ±10V, 0…20 mA Bipolar +10V Unipolar	 753 Main Control Board TB1	**Configuration** Port 0: P270 [Anlg Out Type], bit 0 = 0 **Set Selection** Port 0: P275 [Anlg Out0 Sel] = Port 0: P3 [Mtr Vel Fdbk] **Adjusting Scale** Port 0: P278 [Anlg Out0 DataHi] = 60 Hz Port 0: P279 [Anlg Out0 DataLo] = 0 Hz Port 0: P280 [Anlg Out0 Hi] = 10V/20 mA Port 0: P281 [Anlg Out0 Lo] = 0V/0 mA **View Results** Port 0: P277 [Anlg Out0 Data] Port 0: P282 [Anlg Out0 Val]

Table 51 - 750-Series I/O Module TB1 Analog Output Wiring

Analog Voltage Output ±10V, 0…20 mA Bipolar +10V Unipolar	 750-Series I/O Module TB1	**Configuration** Port 4 (or port where your I/O module is installed): P70 [Anlg Out Type], bit 0 = 0 **Set Selection** Port 4 (or port where your I/O module is installed): P75 [Anlg Out0 Sel] = Port 0: P3 [Mtr Vel Fdbk] **Adjusting Scale** Port 4 (or port where your I/O module is installed): P78 [Anlg Out0 DataHi] = 60 Hz Port 4 (or port where your I/O module is installed): P79 [Anlg Out0 DataLo] = 0 Hz Port 4 (or port where your I/O module is installed): P80 [Anlg Out0 Hi] = 10V/20 mA Port 4 (or port where your I/O module is installed): P81 [Anlg Out0 Lo] = 0V/0 mA **View Results** Port 4 (or port where your I/O module is installed): P77 [Anlg Out0 Data] Port 4 (or port where your I/O module is installed): P82 [Anlg Out0 Val]

Digital Output Wiring

Table 52 - 753 Main Control Board Digital Output Wiring

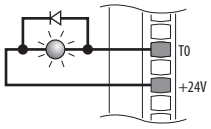
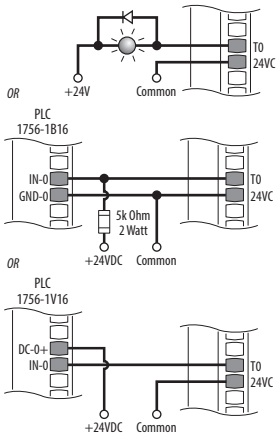
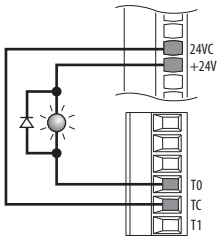
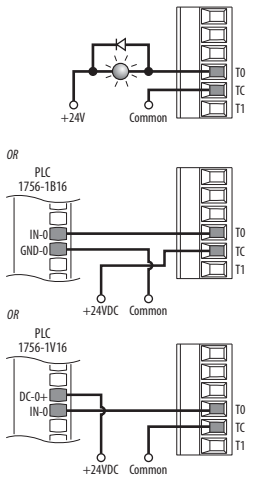
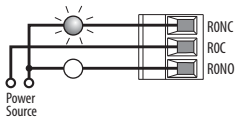
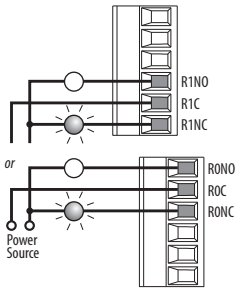
Digital Output Internal Supply	 753 Main Control Board TB1	**Set Selection** Port 0: P240 [T00 Sel] = Port 0: P935 [Drive Status 1], bit 7= Faulted **View Results** Port 0: P225 [Dig Out Sts]
Digital Output External Supply	 753 Main Control Board TB1	When T0 is On, IN-0 is Off.

Table 53 - 750-Series I/O Module TB1 Digital Output Wiring

Digital Output Internal Supply 20-750-2263C-1R2T	 750-Series I/O Module TB1 750-Series I/O Module TB2	**Set Selection** Port 4 (or port where your I/O module is installed): P20 [T00 Sel] = Port 0: P935 [Drive Status 1], bit 7= Faulted **View Results** Port 4 (or port where your I/O module is installed): P5 [Dig Out Sts]
Digital Output External Supply 20-750-2263C-1R2T	 750-Series I/O Module TB2	

Relay Output Wiring

Table 54 - 750-Series Control Board and I/O Module TB1 Relay Output Wiring

Relay Output External Supply	 753 Main Control Board	**Set Selection** Port 0: P230 [RO0 Sel] = Port 0: P935 [Drive Status 1], bit 7 = Faulted **View Results** Port 0: P225 [Dig Out Sts]
	 750-Series I/O Module	**Set Selection** Port 4 (or port where your I/O module is installed): P10 [RO0 Sel] = Port 0: P935 [Drive Status 1], bit 7= Faulted **View Results** Port 4 (or port where your I/O module is installed): P5 [Dig Out Sts]

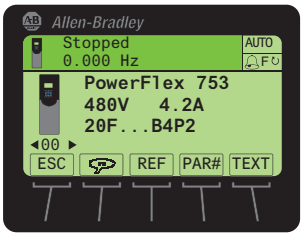
Disable the HIM Start Function

There are times when disabling the HIM is necessary, such as when the user requires only to use other discrete input or communications that are controlled by Start/Run, Jog, and Direction commands.

Parameter 324 [Logic Mask] is used to disable or "mask" out the HIM performing any Start, Jog, and Direction Logic function by setting bit 01 on Port 1 equal to "0".

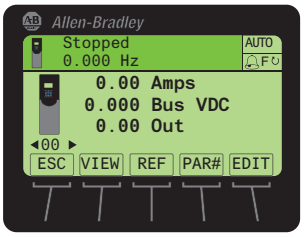
IMPORTANT Setting parameter 324 [Logic Mask] to "0" to disable the Start, Jog, and Direction commands DOES NOT mask the Stop commands. The Stop function cannot be disabled.

1. Starting from either screen, press the PAR# soft key.



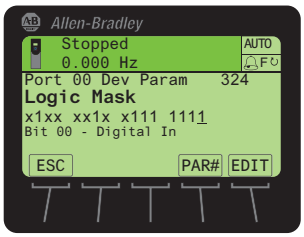
Status Screen

OR



Status Screen

2. Press the EDIT soft key.
3. Use the ◂ soft key or the 4 ◂ on the keypad to highlight bit 01.



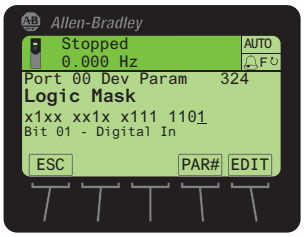
Logic Mask Screen

Edit Logic Mask Screen

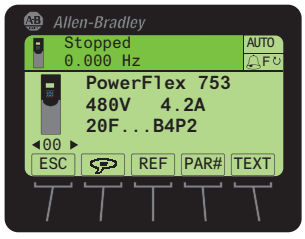
Edit Logic Mask Screen

4. Press the 0 or 2 on the keypad to change bit 01 to "0".
5. Press the ENTER soft key.
6. Press the ESC soft key.

Edit Logic Mask Screen



Logic Mask Screen



Status Screen

HIM CopyCat Function

PowerFlex 750-Series drives and PowerFlex 7-Class drives provide a CopyCat function that enables you to upload individual parameter sets for the host drive or any of its connected peripherals into the HIM. Furthermore, an Upload All Ports function enables you to conveniently upload multiple parameter sets for the host drive and all of its connected peripherals in one single file. In either case, this information can then be used as backup or can be transferred to another drive or peripheral device by downloading the file from the HIM's memory.

TIP The Upload All Ports and Download All Ports functions are only available for the host drive (Port 00) due to their unique functionality.

TIP Before beginning the Download All Ports function, verify that your option cards are located in the same ports as the drive you are copying the parameters from. Also, verify the port you are working on before beginning the CopyCat from Device to HIM function.

The CopyCat function also enables you to rename or delete individual or multiple parameter sets stored in the HIM.

The HIM can store up to 50 individual parameter sets or up to 5 multiple parameter sets. Due to the memory capacity of the HIM, these maximums will vary when storing combinations of individual and multiple parameter sets.

Generally, the upload or download transfer process manages all conflicts. However, the download will stop and a text message will appear if any of the following conditions exist:

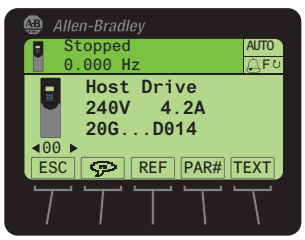
- A device mismatch, such as firmware revision, device type, or device series is detected.
- The drive is password protected.
- The drive is running.

You then have the option to completely stop the download or continue after noting the discrepancy for the parameters that could not be downloaded. These parameters can then be manually adjusted.

IMPORTANT When using the HIM with a PowerFlex 753 drive with firmware revision 1.05 or earlier, or a PowerFlex 755 drive with firmware revision 1.10 or earlier, the CopyCat function cannot upload/download DeviceLogix values for DLX Out xx and DLX In xx parameters and DeviceLogix program routines. Drives with a later firmware revision support this function, but the HIM does not support screen formatting for the DeviceLogix program.

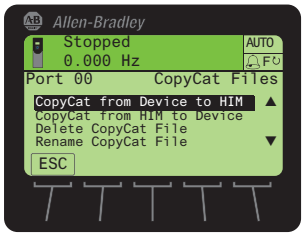
Creating CopyCat Files

1. Access the Status screen.



2. Use the 4 or 6 key to scroll to the Port of the device whose parameter set you want to copy (for example, Port 00 for the host drive).
3. Press the key to display its last-viewed folder.

4. Use the 4 or 6 key to scroll to the MEMORY folder.
5. Use the 2 or 8 key to select HIM CopyCat.
6. Press the 5 (Enter) key to display the CopyCat Files selection screen.



TIP Before any CopyCat files are created, only the 'CopyCat From Device to HIM' menu item is shown. When Port 00 for the Host Drive is selected in Step 2, the 'Upload All Ports' menu item also appears.

7. Use the 2 or 8 key to select the appropriate action and press the 5 (Enter) key to initiate that action.
8. With New File selected on the Select Upload File screen, press the 5 (Enter) key to create the file. A pop-up box will appear to confirm that the CopyCat file was successfully created. Press the ENTER soft key to complete the procedure.

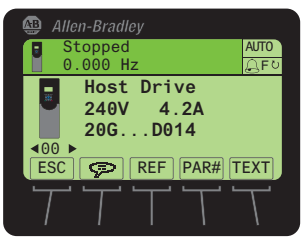
TIP When a CopyCat file is created, its default file name corresponds to the device whose file is being copied. For example, a newly created CopyCat file for a PowerFlex 755 drive has a default file name of 'PowerFlex 755'.

When selecting an item row that is an existing CopyCat file—not a 'New File' row—to create a new CopyCat file, an Overwrite pop-up box will appear. Press the ENTER soft key to affirm and overwrite the existing CopyCat file—or press the ESC soft key to cancel.

Renaming CopyCat Files

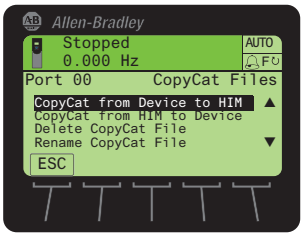
IMPORTANT Text editing is not supported when using Asian language characters. Only characters in the ISO 8859-1 Latin 1 Character Set, which is supported by U.S. and European personal computers, are available. If a software tool is used for text editing Asian characters, the HIM will replace all unsupported characters with a [] (narrow rectangle) mark.

1. Access the Status screen.

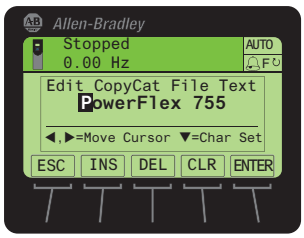


2. Use the 4 or 6 key to scroll to the Port of the device whose CopyCat file you want to rename (for example, Port 00 for the host drive).
3. Press the folder key to display its last-viewed folder.

4. Use the 4 or 6 key to scroll to the MEMORY folder.
5. Use the 2 or 8 key to select HIM CopyCat.
6. Press the 5 (Enter) key to display the CopyCat Files selection screen.



7. Use the 2 or 8 key to select Rename CopyCat File.
8. Press the 5 (Enter) key to display the Select File To Rename pop-up box.
9. Use the 2 or 8 key to select the file to be renamed.
10. Press the 5 (Enter) key to display the Edit CopyCat File Text pop-up box.



11. Use the 4 or 6 key to move the cursor to the desired character position in the displayed name.
12. Press the 2 key to access the last-viewed character set.
13. Press the appropriate numeric key to access the desired character set.

Numeric Key	Function
1	Selects the numeric character set.
3	Selects the symbols character set.
7	Selects the upper case letter character set.
9	Selects the lower case letter character set.

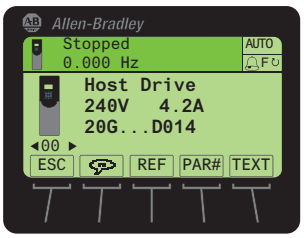
Also, use the appropriate soft keys to help create the new name.

Soft Key	Function
DEL	Deletes a highlighted character.
INS	Inserts a space to the left of a highlighted character.
CLR	Deletes an entire text string.

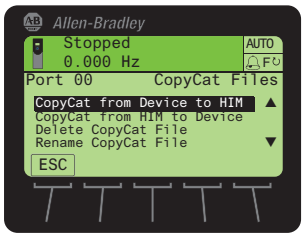
14. With the desired character selected in that character position, press the 5 key to select and enter the character.
15. Repeat steps 11 through 14 for each character position.
16. When the desired name is displayed on the edit pop-up box, press the ENTER soft key to enter and save the new name.

Deleting CopyCat Files

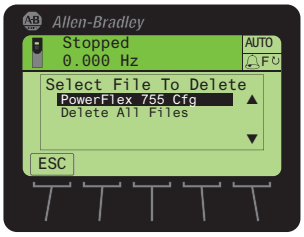
1. Access the Status screen.



2. Use the 4 ◂ or ▸ 6 key to scroll to the Port of the device whose parameter set you want to delete (for example, Port 00 for the host drive).
3. Press the key to display its last-viewed folder.
4. Use the 4 ◂ or ▸ 6 key to scroll to the MEMORY folder.
5. Use the 2 or 8 key to select HIM CopyCat.
6. Press the 5 (Enter) key to display the CopyCat Files selection screen.



7. Use the 2 or 8 key to select Delete CopyCat File.
8. Press the 5 (Enter) key to display the Select File To Delete pop-up box.



9. Use the 2 or 8 key to select the file (or all files) to delete.
10. Press the 5 (Enter) key to display the confirmation pop-up box.
11. Press the ENTER soft key to affirm and delete the selected CopyCat file, or press the ESC soft key to cancel.

    Another pop-up box will appear to confirm that the CopyCat file was successfully deleted.
12. Press the ENTER soft key to affirm and complete the procedure.

Motor Overload

It can be necessary to adjust parameter 414 [Mtr OL Hertz]. Adjusting this parameter to a default of 20 Hz is a conservative setting to protect a typical induction motor that is not designed to adequately cool itself at full load when its rotor/internal fan is turning less than 20 Hz. Understand the speed range specifications of your motor in order to set parameter 414 [Mtr OL Hertz] to the approximate minimum operating speed under full load.

Motor and drive applications operate on a wide variety of operating speed ranges. Typical speed ratios for constant and variable torque motors in applications are expressed in terms of Motor Base Speed to Motor Minimum Speed.
Refer to Table 55.

Table 55 - Typical Speed Ratios for Constant and Variable Torque Motors

Example Motor Base Speed = 1750 RPM / 60 Hz			
Minimum Speed			
RPM	Hz	% Motor Base Speed	Speed Range Ratio
875	30	50	2:1
438	15	25	4:1
175	6	10	10:1
88	3	5	20:1
17.5	0.6	1	100:1
1.8	0.06	0.1	1000:1

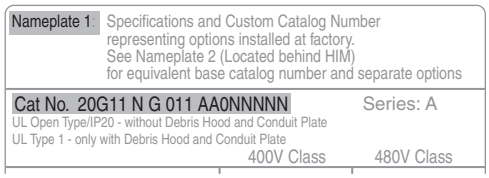
If You Have to Contact Technical Support

If your drive application is for a fan or a pump and you are having difficulty tuning the motor to the drive, review the recommendation Knowledgebase article “486982 - PowerFlex 753 or 755 Drive: Centrifugal Fan/Pump Setup Guide”.

Prior to contacting technical support resource, collect the following information and be ready to provide it to the support representative.

Nameplate Information

Drive Catalog Number


Nameplate 1
Specifications and Custom Catalog Number representing options installed at factory.
See Nameplate 2 (Located behind HIM) for equivalent base catalog number and separate options
Cat No. 20G11 N G 011 AA0NNNNN
Series: A
UL Open Type/IP20 - without Debris Hood and Conduit Plate
UL Type 1 - only with Debris Hood and Conduit Plate
400V Class
480V Class

	1…3	*4*	*5*	*6*	*7*	*8…10*	*11*	*12*	*13*
20F (753)									
20G (755)									

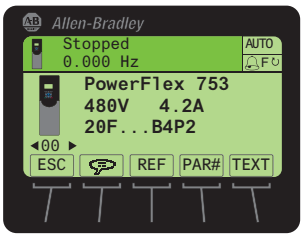
If Nameplate 1 is not visible, record the values of the following parameters.

P20 [Rated Volts]	P21 [Rated Amps]	P22 [Rated kW]

Device Version Information

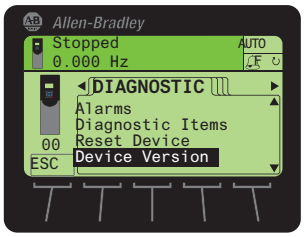
Access the Device Version screen on the HIM and record the necessary information.

1. Access the Status screen.

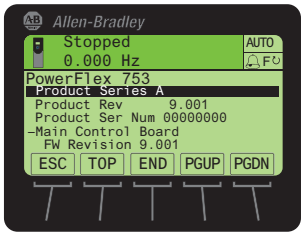


2. Use the 4 ◄ or ► 6 key to scroll to the Port of the device whose firmware version you want to view (for example, Port 00 for the host drive).
3. Press the folder key to display its last-viewed folder.
4. Use the 4 ◄ or ► 6 key to scroll to the DIAGNOSTIC folder.

5. Use the 2 or 8 key to select Device Version.



6. Press the 5 (Enter) key to display device version information.



7. Record the information.

Product Series	Product Revision	Product Serial Number	Main Control Board Firmware Revision

Power Jumper Configuration Information

Power Jumper Configuration	
Jumper PE-A - MOV / Input Filter Caps ❑ Connected ❑ Disconnected	Jumper PE-B - DC Bus Common Mode Caps ❑ Connected ❑ Disconnected

Rockwell Automation Support

Rockwell Automation provides technical information on the Web to assist you in using its products. At http://www.rockwellautomation.com/support you can find technical and application notes, sample code, and links to software service packs. You can also visit our Support Center at https://rockwellautomation.custhelp.com/ for software updates, support chats and forums, technical information, FAQs, and to sign up for product notification updates.

In addition, we offer multiple support programs for installation, configuration, and troubleshooting. For more information, contact your local distributor or Rockwell Automation representative, or visit http://www.rockwellautomation.com/services/online-phone.

Installation Assistance

If you experience a problem within the first 24 hours of installation, review the information that is contained in this manual. You can contact Customer Support for initial help in getting your product up and running.

United States or Canada	1.440.646.3434
Outside United States or Canada	Use the Worldwide Locator at http://www.rockwellautomation.com/rockwellautomation/support/overview.page, or contact your local Rockwell Automation representative.

New Product Satisfaction Return

Rockwell Automation tests all of its products to help ensure that they are fully operational when shipped from the manufacturing facility. However, if your product is not functioning and needs to be returned, follow these procedures.

United States	Contact your distributor. You must provide a Customer Support case number (call the phone number above to obtain one) to your distributor to complete the return process.
Outside United States	Please contact your local Rockwell Automation representative for the return procedure.

Documentation Feedback

Your comments will help us serve your documentation needs better. If you have any suggestions on how to improve this document, complete this form, publication RA-DU002, available at http://www.rockwellautomation.com/literature/.

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